

# COMPUTERWORLD

## THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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### It Could Be Real

Stick figure reacts to a computer-simulated front-end crash in Ford Motor Co.'s safety campaign. Story on Page 12.

## Honeywell 115 System Handles 8 I/O Trunks

By Frank Piasta

CW Staff Writer

WHILE THE 115's Mass. Institute of Technology, Mass. Institute of Technology, the Honeywell 115 disk-oriented system was announced last week.

Designed for the first-time computer user, as well as users of such competitive small systems as IBM's 360/20, NCR's Century 100, and Univac's 9300, the 115 is priced in the \$2,500 to \$6,000/mo. rental range, placing it between the 110 and 120 in the Honeywell 200 series. Honeywell is relying on "laboratory" techniques to convert the 115 system with a minimum of effort. Included are an RFG-to-obol conversion, primarily for present 360/20 users, and Easytran for users of IBM 1400-type systems.

The use of the disk-coded programming system, currently available on the 110, will make the transition to the 115 easier.

For users of the smaller system, Honeywell said. Also offered with the 115 is the Mod II Mass. (Resident) operating system which is currently available with the 300 series.

The system has a main memory cycle time of 2.75  $\mu$ sec, faster than the 110 at 4.0  $\mu$ sec, and midway between the 120 at 3.0  $\mu$ sec, the 125 at 2.5  $\mu$ sec.

Core memory available with the 115 starts at 16K characters, and is expandable to 24K or 32K characters. Other standard features of the 115 include advanced programming and financial editing instructions, which are optional on the 110, 120, and 125.

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## System/3 Communications: 360-Compatible Plus Ascii

By Frank Piasta

CW Staff Writer

WHILE PLAINS, N.Y. IBM filled in the major gap in System/3 capabilities last week with the announcement of a communications adapter.

The adapter will allow the System/3 to be used as a communications terminal, exchanging data with other System/3s and all models of the IBM 360 series, except for the 360/44, over telephone lines, IBM said.

Using a 360 as a central point, the System/3 also will be able to indirectly communicate with the IBM 1150 and 1800, according to IBM.

The System/3 can function in this manner as a station on a communications line with devices that have compatible binary, synchronous capabilities. In addition to the two computers mentioned, these include the 2770 and 2790 communications systems and the 2790 data transmission terminal.

Depending on the type of communication line selected, System/3 will handle data at medium speeds (600 to 4,800 bit/sec), or high speeds (up to 50,000 bit/sec).

Both BCD and Ascii codes will be available. With an optional 41 BCD feature, users will be able to transmit complete programs from one System/3 location to another in a network, IBM said.

Programming the adapter will be simplified, IBM said, by an optional programming support feature for use in conjunction with the RFG II language.

This feature is said to include a fill-in-the-blanks telecommunications specification sheet through which the user can describe the

communications tasks he wants performed. This information is then punched into cards and compiled with the user's application program.

The optional data program feature of the System/3 can be used by System/3 disk configurations to process applications programs while the system is concurrently used in a communications network.

An automatic answering capability built into the communications adapter will allow a remotely located System/3 to answer calls from another computer when the machine is unattended. Incoming data is automatically stored on a disk file or punched into cards.

IBM has also announced an optional feature that will enable the System/3 to "dial-up" another computer under program control. The stored program will be used to control the initiation and ending of transmission.

The adapter will rent for \$265/month, or may be purchased for \$12,985. A required adapter attachment will rent for \$35/month and sell for \$1,725. The RFG II telecommunications feature will be available for \$35/month under a license agreement.

Customer deliveries of System/3 with the communications adapter will start in the first quarter of 1971.

## Precautions Preclude Misuse of Student Data

By Joseph Hanlon

CW Staff Writer

WASHINGTON, D.C. Extreme measures have been taken to protect the confidentiality of sensitive data on over one million college students.

Under one such procedure, the only file relating names to data is kept outside the country, where it is not available to anyone, including researchers, and cannot be subpoenaed by U.S. courts or congressional committees.

The data is based on questionnaires administered by the American Council on Education (ACE) to incoming freshmen at over 400 colleges.

The students answer 120 questions, including ones on sensitive issues such as the student's opin-

ions on politics, drugs, and how frequently he has participated in demonstrations.

Follow-up studies are done on about one-fourth of the students after their freshman year and after they graduate.

The ACE hopes to evaluate the impact of college on students, and to examine factors important in attrition rates and achievement and development of students.

"We also hope to evaluate the utility of a college education, and compare schools such as Harvard and Iowa State," explained Robert F. Boruch, and ACE Research Associate.

Because they are following the progress of a student through school, it is necessary to have some way to relate follow-up interviews to the original but since the ACE is interested in statistical results, there is no need to relate the data to names and addresses.

Boruch warned that there is a great possibility for misuse of the data. "Questionnaire data may be used to persuade, influence, or intimidate students." Furthermore, congressional or other investigators might be interested in material on student activists, he said.

To prevent such misuse, the ACE has taken elaborate precautions. When student questionnaires arrive, three files are set up: one for the student name and address and an ID number, the second for the questionnaire answers with a different ID number, and the third, "The Link," which relates the two sets of ID numbers but has no names

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### Memo to Readers

## There's No Haste in the Post

Been getting your Computerworld yet? You're not alone.

Some subscribers report that their issues of Computerworld are arriving a week or more late. Many other weekly publications are experiencing similar delivery problems.

The apparent reason for the delays: A "temporary" transportation arrangement for second-class mail that went into effect Nov. 10. The regulation was originally supposed to be in effect only through Dec. 31 (presumably to handle the monumental Christmas-mail volume). It was apparently extended beyond the Dec. 31 cutoff date by telephoned instructions rather than a written Post Office Department memorandum.

The "temporary" regulation, titled "Commingling of Certain Preferential Mail with Non-Preferential Mail in Containers," was addressed to postmasters in post offices where package, flexvans,

railroad cars and/or intersectional highway vehicles are loaded. It stated that postal employees "shall commingle sacks and outside parcels of the following types of preferential mail with non-preferential loaded into such transportation units: Special delivery parcel post, special handling parcel post, newspapers other than dailies."

What this means is that Computerworld, and all other weekly newspapers, are no longer getting the preferential handling for which they are paying, but must first wait until all preferential mail is handled. Since new preferential mail containers come in every day, it can be some time before the non-preferential containers are opened.

Our talks with other newspaper editors indicate that the Post Office has taken steps to refine the present transportation system so that time-value mail will

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# Universities Seek Unbundling Answer

By a CW Staff Writer  
ATLANTA - Legal recourse from unbundling was a major theme of attention at the special interest group of university computing centers at the ACM meeting held February 16 to 18.

More than 65 representatives from some 60 universities were in attendance at what was called, "Not an angry meeting. It was what you would expect a concentration camp-hospitality."

The session on legal aspects of unbundling turned into a discussion of what recourses a university would have to counteract some of the adverse effects of the new unbundled world.

Boycotting was one suggested action, with universities buying from unbundled manufacturers.

Some are considering suit for what they consider are clauses in their contracts that imply help that is no longer given. Others feel that there may be documentation in their contracts for services no longer given that could result in concrete legal action.

Among these are the city universities of New York, who are considering suing IBM because of services that are now lost through their policy of buying all computers.

## Agreement Reached

Agreement on a course of action was reached regarding the current anti-trust suit against IBM which many believed would result in another consent decree being signed by the company. Under the last one, any further suits, other than the govt's, were left up to the Justice Dept., with individuals unable to sue.

The university group drew up a resolution to be submitted to the Justice Department to exert pressure that in the event an other consent decree is arrived at, it be worded so that individuals may also bring suit for damages.

Under the earlier consent decree, university representatives felt that they lost money because they were prevented from presenting suit.

Feeling the pinch the hardest because of unbundling are those who purchase their systems including 360/91 users and CTR 6000 series. These computers represent extremely heavy capital investments by universities. Their position is expressed by the following comment, "We purchased with the understanding of having certain services. Now we can't have them. We're left out in the cold without even the benefit of price reduction given to those who lease equipment."

## Industry Problem

The university group took the position that unbundling is an industry problem, not just an IBM one.

CTR, which unbundled its 6000 series, was represented by Dick Wentworth who said in effect that CTR was always unbundled.

Dave Kearns, IBM vice-president, assured an unbelieving audience that it would be better for them in the long run.

Kearns also admitted that unbundling was not a result of the

current lawsuits but had been in the works for some time.

## Benchmarking Streessed

Another hot topic taken up was that of establishing a new procedure for university procurements—benchmarking.

This means that the vendor must perform to certain specifications to get the contract and fulfill other benchmarks or face penalties and possible cancellation as a result.

Universities have not done this in the past but have contributed their own SE time to make both hardware and software work. They are no longer willing to do this.

According to one attendee, IBM would never in the past accept benchmarking contracts, but the universities can no longer afford the generosity of contributing effort to bring the manufacturers' hardware and software up to performance. As he put it, "no more."

## California Plan

Another impasse that the universities and IBM are approaching is the position recently taken by the University of California's vast complex of computer facilities. This policy states that no contracts for services are to be signed under IBM licensing agreements but are to be under standard university purchase requirements and all are to come up for competitive bidding.

In regard to acceptance by IBM of the university's position on the purchase requirements, one observer said, "Lots of luck."

Universities, seriously hit by

budgetary cutbacks as well as unbundling, feel that IBM should make concessions to the universities in general and to purchasers in particular.

## Education Plan

To help bring this about a strongly supported suggestion was that the university, embark on an education program for federal funding groups and congressional committees to explain to them the effects of unbundling.

It is hoped that this would be educational and would also help bring about some changes by pressure being exerted from Washington. As one man put it, "The universities' problem. There just is no money."

"We are getting along by doing without but it is going to catch up with us."

Prior to unbundling, the universities ran as many people as possible through IBM's training courses which they were still free. To cover the costs of now having to pay for education, it was suggested that the universities share expenses on having one or two people trained and that those people then conduct classes at cost or slightly above, for the universities.

The special three-day meeting covered all bases related to unbundling with SE and software products felt to be the most critical for university installations.

It is expected that a report will be published summarizing the suggestions and positions taken at the different sessions.

# Budget Limits Hinder Civic SE Contracts

By Phyllis Higgins  
Civ West Coast Bureau

LOS ANGELES - Without exception, all county and city data processing managers contacted by CW in California report that they have not signed any SE contracts with IBM since unbundling took effect January 1, and most of them do not expect to sign in the future.

When asked how they were getting along, the feelings of them all could be summed up by one man who said, "We're getting along, with a lot of prayer."

Civic governments are on a July to July fiscal year, so unbundling caught them mid-stream.

The most seriously affected, at least on the point that they would admit it, was San Francisco. A spokesman said they had estimated that to receive the amount of support they had gotten in the past would put them \$125,000 over budget.

The controller acknowledged that they "will have to go out and get more funds." At the present time city attorneys are working with IBM's lawyers in an effort to come up with some kind of agreement.

Los Angeles County estimated that their SE arrangement, if carried on as before, would cost them \$25,000 over budget. They took steps to ease the transition to unbundling by forming a systems group made up of people who had been working on

four different manufacturers' equipment.

"We found the degree of integration among them was growing so we pulled them all together. So far, we are getting by."

## New Units Call for Help

The extent to which unbundling has caused a problem for local governments is dependent upon how far along they were with their systems. Those with new systems are the most affected.

More than one said that if they install any new equipment, they will have to get SE help.

All local governments are taking steps to solve the unbundling problem by becoming as self-sufficient as possible. That is more difficult for them than for others. They are particularly troubled by the mobility of the programmer population as they have difficulty in meeting competitive salary scales.

This has made them dependent upon IBM in the past as equipment could be justified but salary increases couldn't.

When asked whether unbundling had added any new dimensions to their looking at other manufacturers' equipment, the Ventura County spokesman said that it makes bidding more confusing, but it also makes other manufacturers' equipment more interesting. Ventura recently replaced an IBM system with a Honeywell 120.

Another factor that un-

bundling has introduced is the local government policy which requires competitive bidding for all contracts awarded. If service suppliers, programming or other, want to enforce it, it means that before any agreements can be signed with IBM, they will have to go through the competitive bid process.

## Apprehension was expressed

by all data processing managers contacted, as they do not think they have been in the unbundled world long enough to really know what it is going to do to them. The only happy man contacted in this survey was the data center head in Orange County. When asked how he felt about unbundling he said, "It feels good." Orange County uses RCA equipment.

# Predicts Stable Hardware Costs with LSI Circuitry

NEW YORK - The cost of computer hardware won't increase over today's levels in the '70s, even though the systems provide users with a five-fold increase in computer power, according to Robert E. Merkle, vice-president of Cozar Corp.

Speaking before the American Management Association's annual EDP conference here last week, Merkle, said that static pricing would result from the growing use of large-scale integration (LSI) in computer systems.

The use of LSI will, Merkle said, "be the single most important factor powering the economic growth of the computer industry."

Most users will double their

computer capability by the mid-70s at no increase in total main system hardware costs. In fact, some users may even pay less," Merkle predicted.

Noting that memory now accounts for about 50% of computer hardware costs, Merkle said that present LSI technology can reduce memory costs by almost one-quarter.

"But," he added, "this cost reduction will typically be offset by the user's need for additional memory to handle rapidly expanding information processing needs. As a net result, costs will remain just about static at today's level."

In addition, Merkle predicted that the use of LSI in computer systems would increase the life cycle for computers.

# Lower Lease Rates Combat Unbundling Costs

By Drake Lundell

**NEW YORK**—Leasing companies now believe the additional costs of unbundling can be overcome through the cheaper third party and second user leases they offer.

Under these plans, a user can rent equipment that has already been leased once, and as such, has been paid for by the leasing companies.

The lease rates for this equipment are considerably cheaper than either the IBM rental rate or the normal third party leases available from the independent firms, according to John Puttre, manager of leasing at DPF&G.

At present the leasing companies have a great deal of equipment available in this category. These companies are presently buying very little new equipment from IBM due to tight money and the worry that a new generation of computers will make obsolete much of the present 360 line.

## Leases Running Out

But, the original three and five year leases for other members of the 360 line are presently running out and many of these machines are now available for second user leases from the independent leasing firms.

There is a good supply of 360/30s, 40s, and 50s now available, in addition to peripheral gear, Puttre said.

The leasing companies are gearing up to lease this equipment.

Savings can be considerable, Puttre says, even if the user only plans to lease a single piece of equipment and not a whole system.

A firm that wants to lease just the central processing unit for a computer system, another lessor says, can more than pay for the additional costs brought on by unbundling from the savings available through the second party lease.

Just renting some of his peripheral equipment through this type of arrangement will produce savings that should come close to paying for the additional costs, this source says.

## All Equal Now

In the past, the leasing companies have been hurt because

IBM would not provide its usual range of services to their customers, or as Puttre says, "unbundling has been with the leasing companies for years."

Since all customers will now have to pay for the services that were formerly free to users who either purchased or leased directly from IBM, this problem will be overcome and users will be able to get the full advantage of the cheaper lease prices available from the independent leasing companies.

In addition, there is a good chance that most of the large third party leasing firms will begin to lease independent peripheral equipment in the near future and therefore be able to provide the user with mixed systems and further savings.

leasing industry sources report. In the past, most of these firms had concentrated on selling complete IBM systems.

## To Manufacture Equipment

It also appears likely that these firms will begin manufacturing their own peripheral equipment for lease, one source said.

Since most of the firms have financed their computer purchases through the use of 20 year bonds, and because the equipment will be paid for on an average of four years, the companies are now beginning to build up a good cash flow that is not committed to paying off equipment purchased in the past few years.

Because of their good cash position, users can expect them

to get into other areas of the computer business, especially independent peripherals and independent software, industry observers believe.

These observers note that while some of the firms are presently in a position to take advantage of these other business areas, the real breakthrough will come in 12 to 18 months, when the 360 series is 6 years old and the large leasing company investments of four years ago are fully paid off.

It appears unlikely, however, that the leasing companies will move into the independent maintenance field.

The firms contacted by CW exhibited no desire to enter this phase of the business, although most would not rule out any future moves.

## Colliers Offers DP-Date Service To Wide Area

**FORT LAUDERDALE, Fla.** Colliers Publishing Co. recently announced the introduction of a newly developed, computer matching and dating service to be offered on a franchise basis in the U.S., Canada, Hawaii, and the Caribbean areas.

Called "Computer Date Line," the Colliers service offers to single people a method by which they can meet and date each other through use of the company's IBM 360/20 computer. Over one million people used these computer matching services last year.

Persons using the service obtain a questionnaire from one of the many display stands located throughout each distributor's territory, or they may request a questionnaire through the mail.

The completed questionnaire, along with a \$10 fee, is returned to the company's headquarters and processed on the computer. Each subscriber then receives a list of compatible names, which he can contact at his leisure.

The franchises being offered will give the distributor the opportunity of operating a computer matching and dating service which involves only a small amount of time each according to the company. Investments start at \$5,750 depending on the size of the territory selected.

Interested persons should contact the company at 23735 Oakland Park Station, Fort Lauderdale, Florida, 33307.



## Low cost solutions to your I/O and display problems

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# DPMAs Test Will Deermine Programmers' Competency

**PARK RIDGE, Ill.**—A registered business programmer examination has been developed by the Data Processing Management Association for the purpose of setting standards and raising the competency level of programmers in the fields of business and industry.

The first exam under the new program will be given Oct. 10. All applications for the exam must be filed by August 1 with DPMAs International Headquarters, 505 Busse Highway, Park Ridge, Illinois 60068.

In development since 1967, the

new examination is the work of DPMAs' certification council and is designed to measure the ability of an applicant at the senior programmer level.

It includes 150 questions and requires 2 1/2 hours to complete. It will be given annually on about 100 test sites, usually college or university campuses, across the U.S. and Canada. Eligibility to sit for the exam is not restricted to DPMAs members. Scoring and analysis of the exam will be performed by independent testing and research organizations. Study guides are

being prepared by DPMAs outlining general areas covered by the exam.

Since the knowledge and skill the programmer field is gained in a variety of ways, and in many cases acquired without formal academic training, no experience or educational requirements are stipulated for the exam. It is expected that an applicant will have sufficient training and experience to reach the level of senior programmer, according to R. Calvin Elliott, executive director.

The general category areas include:

covered by the new exam include:

- Principles of programming.
- Meta programming systems.
- Problem-oriented languages.
- Algo, Lisp, Simscript, Fortran and Cobol.
- Data processing system design.

• Computational topics.

This exam thus becomes the second offered by DPMAs. The first was introduced in 1962 and, leads to a certificate in data processing (CDP) which is based on tests of knowledgeability at the management level. It requires substantial formal academic training and a specified period of work experience.

The CDP exam has been taken successfully by more than 10,000 applicants. A total of 2,700 applied for the 1970 CDP exam held February 14.

Although the new exam has little relationship to the CDP program, the DPMAs certification council hopes that successful candidates for the new exam will be well suited to develop the personal background, technical and management knowledge to the level which will enable them to qualify for the CDP exam.

Herman Roemich, Ph.D., director of testing and an instructor of psychology at San Diego State College, Calif., who was instrumental in the development of the CDP exam, served as test consultant for the new program.

When the new exam was finalized, it was administered to small groups of programmers of recognized ability in order to establish its validity and reliability.

said Roemich. Exam questions are based on an exhaustive analysis of actual requirements of knowledge and skill involved in this position in a broad range of industries and business, Roemich said.

The first programmer exam was put together in 1968 under

strict, scientific conditions, according to DPMAs. But since then several revisions and evaluations have been made.

DPMAs believes it is an exam which identifies those who pass as persons with a common body of technical knowledge which should enable them to be efficient, effective business programmers.

Commenting on the purpose and need of an exam of this type, Roemich said that when the CDP exam was first introduced it was not intended to serve the business programmer field.

"It was felt by the DPMAs certification council that appropriate recognition of superior programming ability would benefit not only the successful exam candidate but the entire information processing industry as well," he said, adding that "the new exam should help attain this objective."

It was noted by the DPMAs certification council that there are few formal academic programs available in the programmer field; there's a lack of known evaluation tools to determine individual qualifications; that work experience is of little quantitative or qualitative value since no two computer installations are identical; and that the level of programming sophistication.

Recognizing the predicted demands for additional programmers for the year 1970 to more than 500,000 in 1975, the council said industry's ability to locate, motivate and adequately remunerate programming personnel should be substantially enhanced by the new DPMAs exam.

An examination fee of \$40 payable in U.S. dollars and equipment and accompanying such application, copies of which can be obtained, as well as a list of test centers and the study guides, from DPMAs International Headquarters.

## Benchmark Election for Votomatic As Detroit Exceeds Ballot Space

By Edward J. Bride

City Staff Writer

**DETROIT, Mich.**—The city clerk here may recommend adoption of IBM's computerized election system, Votomatic, if a demonstration this week is successful.

George Edwards says that the standard automatic voting machines are no longer adequate for the nation's fifth largest city. If 10,000 occupants of a center-city low-rent area can use Votomatic successfully in an election this week, then city clerk Edwards may recommend buying thousands of units in time for an August 4 primary.

IBM no longer markets Votomatic, but several "offshoot" companies have been authorized to sell and service the units on a city basis.

Two such offshoots are Computer Election Systems and Datamedia, both bidding for a Detroit contract that would certify machines in each of the city's 1,100 voting precincts.

Also in the running is Voting Instrument Products, not yet certified in Michigan, but which may soon become eligible to provide similar services, Edwards says.

The city clerk also said that Computer Election Systems and Datamedia were staffed by former IBM salesmen and Votomatic programmers or repairmen. He indicated that some of the personnel had been with IBM for as much as 10 years before IBM stopped marketing the system last year [CW, March 19, 1969].

'Los Angeles County and about a dozen states currently use, or have authorized use of, Votomatic.

The system came under fire last year when several experts announced that they had rigged elections in a "war game" environment, and that their rigging went undetected.

Since that time, a lengthy series of hearings has been conducted by the Los Angeles County Election Security Committee [CW, Nov. 19, 1969]. The main topic of discussion was the system's vulnerability to tampering, and some witnesses suggested that use of Votomatic should be discontinued.

The hearings were concluded in December, and a final report is expected shortly.

### A Simple Solution

Edwards believes he has a plan to get around Votomatic's reported vulnerability.

He said that Detroit would alter the position of candidates on each machine, making it necessary for any intended defrauder to "buy" 5,000 election voters (five for each precinct) and then educate them prior to an election.

Position of the candidates would be stored in memory, and the header card for each precinct would "find" the correct arrangement when counting was to begin.

Edwards indicated that the possibility of altering the master program had not been considered.

He did say, however, that the advantages of speed and accuracy over the relative cost of a computerized vote count, make the Votomatic, or whatever slightly-modified version might be procured, a desirable acquisition.

He added that lever machines and paper ballots are also subject to tampering, but that the computerized system would reduce the possibility.

### Proliferation of Candidates

The city clerk said that Detroit has nine "regional" school boards, and that other normally "municipal" positions are proliferated to a greater degree.

He said that on a recent ballot, there were 286 candidates, and a standard voting machine would run out of space.

He forecasted the day when a minimum of 350 candidates, plus referenda, will be offered to voters, and notes that "certain individuals" may have to be made to the system currently available.

The current system is limited to 235 candidates.

## Honeywell's 115 Handles 8 1/0 Trunks

(Continued from Page 1)

Two read/write channels are standard, with a third available as optional equipment. This allows up to three simultaneous peripheral operations to take place during computing. Honeywell's Type 115 disk drive handling is an available option.

Card reader, card punch, disk, and printer controls are all integrated into the central processor and included as standard features, along with automatic I/O and data communications interface.

Eight I/O trunks are included in the standard equipment, allowing the attachment of up to eight peripheral controllers to the 115.

Peripheral equipment available with the 115 includes printers with speeds ranging from 300 to

1,100 line/min, a card reader/punch that reads 400 card/min and punches 100 to 400 card/min.

Seven and nine-track magnetic tape drives are also available. Speeds of the Type 205B series range from 20K to 67K char/sec, while the nine-track series 204D drives operates at 20K to 154K char/sec. Tape densities from 100 to 1,600 bit/in. are available.

Disk drives available with the 115 include the Type 155 two-spindle disk unit and the newly announced Type 172 single-spindle drive that accepts 10 surface disk packs. Up to four drives of either type can be connected to the central processor to provide storage of up to 36.8 million characters. Honeywell's Type 115 disk drive

The Type 155 disk drive, originally announced with the 110 and subsequently made available with the 120 and 125, has a capacity of 3.6 million characters per pack. Average seek time is 100 msec. Data is transferred at the rate of 147.5K char/sec. The Type 172 disk drive is thus far only available with the 115. A rotational speed of 2,400 rpm results in an average latency of

12.5 msec. It has an average seek time of 50 msec and can store 9.2 million characters on each 10-surface pack. Character transfer rate is 208.3K char/sec.

A comparison with the IBM 360/20 shows that the 115 is strongly competitive. Only the IBM submodel 55 has a faster internal speed, 2.0 µsec for two bytes. The IBM 360/20 has a cycle time of 3.6 µsec per byte.

A typical configuration of the Honeywell 115 system thus includes a central processor with 16K of main memory, a 300 line/min printer, card reader/punch and 7.2 million characters of disk storage would lease for \$2,936/mo. A similar 360/20 configuration would cost \$4,630/mo.

An additional saving would be realized from software costs. Honeywell includes this charge, as well as systems support and education as part of the monthly rental.

Lease prices for the Honeywell 115 will range from \$964 to \$1,675/mo. Purchase prices can vary from \$50,000 to \$77,905.

First deliveries of the Model 115 will be made in June 1970.



**COMPUTERWORLD**

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# Continuing Operation Can Impede Couplers

By Ronald A. Frank  
CW Communication Editor

**BOSTON**—Some users are encountering problems with acoustically coupled computers, but the trouble may be due to a misapplication of equipment.

Several instances have recently been described where acoustic couplers were not operating properly. In each case the couplers were left connected for uninterrupted periods.

A survey of coupler manufacturers, telephone company communications sources, and industry consultants has revealed that acoustic couplers may perform unsatisfactorily unless these units are used intermittently.

Although a number of factors are involved in reliable operation of acoustic couplers, the characteristics of standard telephone handsets are important. Most phones have carbon granule transmitters, which, according to

Bell Laboratory sources, operate most efficiently in a vertical position. In addition, these carbon granules can set up a magnetic field unless the handset is periodically jostled through normal arm movements involved in making a telephone call.

When the telephone handset is left connected for extended periods, which in some computer applications means without interruption, the carbon transmitter granules become "packed" and a loss in transmitting capability results.

Although this problem is not new, having originated when couplers first came into widespread use, apparently little can be done to correct the problem except for physically jostling the handset. One industry consultant told CW that the carbon packing problem is one of the reasons that acoustic couplers are recommended for intermi-

tent use only.

Most manufacturers agree. One West Coast firm, a leader in the acoustic coupler field, warns users that "the sensitivity of carbon microphones used in telephone handsets can sometimes decrease" when the units are connected for long periods of time. It further tells users that when microphone sensitivity is suspected, the users "should occasionally tap the microphone" to restore sensitivity.

## Solutions Offered

Officially, Bell Laboratory sources say that the matter is being investigated, but Bell specifications already say that a small packing effect "usually has no effect" on data being transmitted. The Bell document adds, however, that low sound pressure, high line current, or long duration of a call are all factors which can adversely affect an acoustically coupled installation.

One recent change in FCC tariffs can provide the best solution for users. It is now possible for users to utilize data modes for hardwired connections of computers to phone lines, thereby eliminating the need for acoustic couplers when continuous operation is required.

A recent statement by Data

Access Systems Inc. sums up the situation: "When working through a standard telephone line, the user faces severe limitations on data transmission by working through a very low response carbon microphone in the telephone handset."

The statement adds, however, that in many instances a combination of a good acoustic coupler together with a good telephone line can provide the

## Communications

user with a satisfactory arrangement.

Although AT&T spokesmen told CW that there was no connection with the handset problem, it was learned that Bell is not presently planning to market the 112A acoustic coupler. Previous Bell reports had indicated that the 112A would be available this spring.

It is also known that Bell Laboratories is developing a substitute for the carbon handset transmitter, which would eliminate the carbon packing problem.

## Monitor Prints Characters in Hex To Check Communications Problems

**CHERRY HILL, N.J.**—The Universal Monitor, from Spectron Corp. diagnoses communications system problems by printing out a hexadecimal representation of every character transmitted.

The monitor connects to the computer interface of standard modems and is automatically synchronized with the data stream. The hex printout includes sex characters, line control characters and format characters, as well as text characters. Five- to eight-bit code at any

speed to 7,200 bit/sec may be monitored, and all line coordination systems accommodated. The operator may optionally switch between the send and receive legs of duplex channels for monitoring, the company says.

The Universal Monitor is available for either shelf or rack mounting. The price of the basic system is \$7,500 and delivery is quoted at 90 days.

Spectron Corp. is located at 1060 Kings Highway.

## Bell Tries to Block MCI With Federal Court Suit

**WASHINGTON, D.C.**—Having exhausted all appeals for reconsideration before the Federal Communications Commission, AT&T and two Bell operating companies have filed an appeal in federal court to block the operation of a data link by Microwave Communications Inc. (MCI).

In August, the FCC approved an MCI, Chicago-to-St. Louis microwave link, designating MCI as a special service common carrier, and sanctioning the company to provide data communications services in direct competition with Bell.

Since the FCC authorization, AT&T and the Bell operating companies have attempted to obtain reconsideration of the ruling, but the commission refused to alter its position.

On Feb. 20, AT&T, Illinois Bell Telephone Co., and South-

western Bell Telephone Co. filed a notice of appeal in U.S. Circuit Court here.

## Insufficient Evidence

In explaining the filing, the Bell System issued a statement which said that Bell feels that the FCC did not have sufficient evidence to justify its decision in the MCI case.

The Bell appeal could delay approval of similar microwave links that have been or will soon be proposed before the commission. Companies that could be affected are MCI affiliates, Data Transmission Co., Communication Properties Inc., and others.

The FCC approval to MCI was finally rendered after a six-year series of hearings before the commission, during which time the Bell System argued that there was little need for the type of service which MCI had proposed.

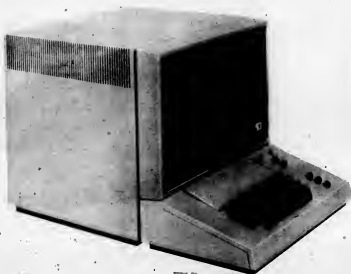
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# Extreme Measures Assure Data Bank Privacy

(Continued from Page 1)  
or questionnaire answers.

## Link File Outside U.S.

The Link file is sent to a service bureau in a foreign country, and the contract with that service bureau specifies it will never copy the file or make it available to outside persons, including the ACE. Even if ACE terminates the contract, the file cannot be returned.

A backup file is sent to a second foreign service bureau that has the same sort of contract. Even the locations of the

service bureaus are not made public.

According to Borch, storing the Link file in a foreign country provides two important protections for the data. First, "since judicial or legislative subpoenas have no validity outside the U.S., it would be impossible for congressional committees or courts to obtain access to information on individual subjects."

Thus, even if someone could get access to both the questionnaire file and the name-and-address file, there would be no way for them to connect the

two since they could not get the Link file.

A second protection, he noted, is that "anonymizing" by members of the ACE research staff is prevented.

## Can't Produce Mailing Lists

The name-and-address file is kept locked in a vault and only removed temporarily when it is necessary to print address labels for follow-up mailings.

When tapes are not in the vault, they cannot be copied or removed from the data processing center without specific authorization from the director of research. This prevents their misuse, for example, to prepare commercial mailing lists.

## Tapes Prepared Outside

As an additional protection, the ACE never gets the original questionnaires. They are sent by the schools directly to a service bureau (not in Washington) where the three tapes are prepared. Then the questionnaires are destroyed, the two data tapes sent to ACE, and the Link tapes sent to the foreign service bureaus.

The questionnaires are optically scanned to eliminate the need for extensive handling required by keypunching, further minimizing the possibility of improper disclosure.

## Follow-up Questionnaires

Similar protections are applied to follow-up questionnaires. The name-and-address file is used to print labels that also contain one ID number. The labels are affixed to questionnaires sent to the student's homes.

The questionnaires are returned directly to a service bureau that prepares a tape containing questionnaire answers and the ID number. The name and address file is created this time.

The questionnaires are destroyed, and the tape sent directly to the foreign service bureau. The foreign service bureau uses the Link file to replace the name and address ID number with the data file ID number. Then the tape is sent to ACE. Because the two data files now have the same ID numbers follow-up studies can be done.

With this procedure, no one ever has access to all three files: the name-and-address files and the two sets of data tapes.

## Can Colleges Be Trust?

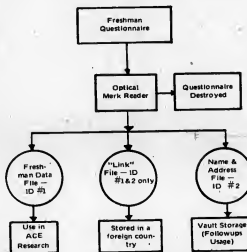
One major security problem remains. The colleges administer the questionnaires and have them for up to two days before they are shipped to the service bureau. During that time, college administrators can scan the questionnaires to look for potential "troublemakers."

Borch admitted that he knew of at least one case where school administrators did this—"But that's one case out of 350 schools for four years, which isn't much," he said.

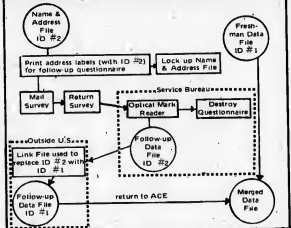
Basically, the ACE trusts that the schools will not use the questionnaires for this purpose, and stresses to the schools the importance of not doing so.

Borch also noted that "apparently, the data is not so useful to

## Handling of Freshman Questionnaire



## Handling of Follow-Up Study



administrators as one might suspect." But he concedes, "It's a weak point," and the ACE is studying the problem.

Previously, the ACE provided schools with complete files, including follow-up studies, but this is no longer done.

Another security problem is the possibility of collusion between various agencies handling the data.

## Inject Errors?

One way to reduce still further the possibilities of data leakage, according to Borch, would be to "inoculate" the data with a certain percentage of errors. Such errors could be accounted for in final statistical analysis, but no one could ever be sure of the accuracy of a specific file. Another would be to allow the students to use another name, either their mother's maiden name or some consistent pseudonym, on all questionnaires.

## Link Software Available

The ACE has been using a CDC 3600, but is now switching to an XDS Sigma 5. Software is based on Harvard's Datatext, and is

available from Harvard, according to Borch.

One reason that ACE has had to develop its own safeguards is that appropriate hardware or software devices are not available. One possible reason, according to Borch, is that there has been little demand, "probably because of the social scientist's naivete regarding computer devices."

## Data Available

The ACE is now making data available to private researchers. But private researchers cannot get actual tapes. Instead, the ACE does the analysis at cost.

So far, about a dozen outside groups have used the ACE files, according to Borch. They were primarily sociologists, educators, and government researchers, he said, who were attempting to obtain evidence for policy decisions. Several studies related to disadvantaged students.

Statistical data is also made available to colleges on their own students. Individual files are no longer included, however. Furthermore, the ACE will not give one college information on another.

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## Editorials

### Political Pressure Needed

At present, the individual has no protection against the use or misuse of personal information in data banks, and it now appears that it will be several years before adequate protective legislation can be formulated.

But the most important data banks are being set up now, and there is a need for immediate protection. Several congressmen have suggested that a person or group be named as a data bank ombudsman, with the power and responsibility to protect the individual against the misuse of information in data banks.

Such an ombudsman provides an immediate solution to an immediate problem. And he would also help to find a long-term solution, because he would be able to use his experience to help formulate laws regulating data banks.

Ombudsmen should be appointed on both the state and federal level. But the appointment of such ombudsmen will occur only if pressure is brought on legislators now. This is an election year and consumer protection is an important issue — congressmen and state legislators will be more responsive this year than at any other time.

We propose that individuals and local chapters of professional societies immediately begin a campaign for data bank ombudsmen. Such a campaign should be primarily educational at first: informing local newspapers, state legislators, and congressmen of the dangers posed by computerized data banks and proposing the appointment of ombudsmen as an immediate solution. And we must keep the pressure on.

Data bank ombudsmen offer the only hope of protecting the rights of the individual in the near future. Concerted action by computer professionals could make such protection a reality.

### Data Bank Protection

After several years of writing about data banks, we have finally found one with adequate protection of individual privacy. The American Council on Education (ACE), with sensitive questionnaires from one million college students, has made it virtually impossible for anyone to connect names with data files.

They have used one ID number for name-and-address and another for the data. The "Link" tape, which connects the two ID numbers, is kept outside the country. No one, not even ACE researchers, can get it. And this is just one of many safeguards followed.

One thing that the ACE has shown is that extreme safeguards need not make it difficult to do research and to get statistical data. Follow-up studies are easy to do. Yet individual dossiers are impossible to get.

We think that the ACE is a bit naive in trusting college administrators with the original questionnaires. But their technical safeguards are phenomenal.

The ACE has shown that it can be done; we hope that their safeguards become the prototype for future data banks.



## Letters to the Editor

### Children Are Not Being Taught How to Think

In your editorial "1984 Comes Closer" (CW, Feb. 4), you point out one danger of push-button learning, but neglect another equally pernicious. I refer to the practice of teaching young children to react to complex questions with the unequivocal directness of Pavlov's dogs.

"Australia is a continent surrounded entirely by water" is a statement which can be answered with a "yes" or "no." A question juxtaposing two controversial national figures and making a simplistic attempt to equate them, is not. To perpetuate the type of education which insists that questions involving judgments about people and events can be answered on a "yes-no" basis is to postpone still longer the day when children are taught, not so-called facts, but how to think.

Dorothy Smallen

New York City

### Blind Obedience Can Slip Into Computer Field

In response to Mr. David W. Chaffin's letter in your Feb. 18 issue:

Once upon a time in Nazi Germany, a group of people who may well have been called Systems Analysts were called upon to work out a means to implement a "final solution." As we all know, they were eminently successful.

When later confronted with the results of their work, these people could (and would) logically claim "we were only following orders" or "we were only doing our job." Their leaders, if computers had been available, would have been the very same individuals Mr. Chaffin refers to as those who have the right to decide how they should be used.

Admittedly this is an extreme example, but it did happen, and it can happen again. Whether Mr. Chaffin realizes it or not, this is precisely what he is asking for in his letter — the same blind obedience that has made man capable of executing one loathsome act after another. We in America are not immune to or innocent of this, nor are those with the means and the right to buy computers any more endowed with the "superior insight" Mr. Chaffin speaks of than we lowly programmers and

analysts. Mr. Chaffin is talking about economics, not morality. These two items have rarely been linked, and this is a crime against mankind.

Unless those of us in the computer field make up our minds to prevent it, computers can and assuredly will be used to perpetuate those "efforts of society" which have brought us Vietnam, racism, unequal justice under-law, and the ability to destroy what little civilization we have built in one million years.

Wake up, Mr. Chaffin! Wake up and re-read Joan Dublin's letter. Failure to heed the lessons of history is, in your own words, "surely a route to chaos."

Stan Myers  
Systems Analyst

New York City

### 'General Retrieval System' Doesn't Belong to IBM

I particularly agree with your article (in the Software Supplement) describing the need for special purpose, higher level languages. Only by allowing the user to communicate directly with his own data through the use of these new and specialized tools will the "Software Age" come close to meeting its expectations.

I appreciate your selection of the General Retrieval System (GRS) as a prime example of a user-oriented information retrieval and reporting system. However, GRS is an Information Science Inc. software product — not IBM's, as *Computerworld* stated.

John V. MacGuffie  
Director of Corporate Systems

Information Sciences Inc.  
New City, N.Y.

The reference was intended to be to IBM's GRS although GRS would have been another example. Ed.

*Computerworld* welcomes comments from its readers. Preference will be given to letters of 250 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, *Computerworld*, 797 Washington Street, Newton, Mass. 02160.

# Getting a Gold Pin by Leaving a Job

Marks of distinction in many firms are the gold pins. These normally best the five-year pin or the ten-year pin. Although in the computer field the ten-year pin is itself quite frequently a gold one. They indicate that the person concerned has not merely stayed with his firm for the necessary length of time, but, what is perhaps even more important, that the firm has treated him well enough so that he has been willing to stay!

One group of gold pins, however, does not have any connotation of the length of time served. They are being supported at the moment by a group of gentlemen who have both left one firm—IBM, in this case—and with the help of \$3 million have set up their own firm, Comma Corp. With a name like that, it just seemed natural to have a pin in the shape of a comma made to set them off from other firms and other people.

## Other Distinguishing Items

Comma Corp. is also distinguished from other firms in a different way. It is being set up particularly to supply engineering maintenance for computer systems where the equipment comes from a number of different sources. In the IBM parlance, that is, for the multiple-supplier installation.

You may have already heard of them. In fact, a few weeks ago the formation of the company was a front page item in *Computerworld*. However, the idea seemed sufficiently interesting, and sufficiently important to users, that I thought some more information about them might come amiss.

When I visited their offices in New York last week the company was really still in a state of formation. Crates of equipment were arriving and had not yet been unpacked. The furniture is still temporary, but already the

shape of the operation was beginning to take place.

Arthur H. Eickhoff, executive vice-president, explained the company's aims. "We intend to provide users who have pur-

something is wrong but all you can do to localize it is to say it is somewhere in the computer room. We will handle the problem which IBM could handle but, under its present policies, normally does not. We will handle it the one way that is practical—by taking it over as one complete job."

## Plug-to-Plug Advantages

Behind this appeared to be an opinion that at least some of the plug-to-plug compatibles must actually be as good as the IBM equivalent equipment. When asked about this, Eickhoff said that they had looked at a number of the plug-to-plugs and thought that there were some which they would be able to maintain at a rate that would allow the user to reduce his total maintenance bill.

## No Price List Yet

Just such these were, at that time, Eickhoff couldn't say. Apparently one of the other things that was not yet quite ready was the price list. He did assure me, however, that the price lists would be published very soon.

## Need for Re-Acceptance

Again thinking from the user's point of view, the fact that the maintenance might not cost as much can be only one side of the bargain. An equally important issue is whether he is going to have the same quality of maintenance. This seemed to be particularly important because of

## The Taylor Report by Alan Taylor



chased IBM mainframes, and who wish to take advantage of some of the plug-to-plug compatibles, with a single maintenance service. At the moment we will concentrate our efforts in the major metropolitan centers. We won't attempt to handle people in out-of-the-way areas. We just can't do it economically."

## Diagnostic Problem

Eickhoff explained why a single maintenance system was in his opinion, desirable. The problem lies in the fact that the diagnostics that are used apparently are not compatible. "They are a lot better than they used to be," he said. "But even so, there constantly arises the problem that you know that

## Comma Corp.'s Gold Pin

the fact that the firm intends to deal primarily with purchased systems.

Purchased systems, unlike rental

ed ones, have to be sold someone—and the users who are buying second-hand IBM systems like to be assured that IBM maintenance is available if they want it.

It is also necessary to be able to restate IBM maintenance at any time, whether or not a sale occurred. The computer might be moved to a different installation where Comma Corp. could not offer services. Eickhoff said that they had decided that the simplest way to meet the user's needs was to guarantee to their customers that the system will be maintained to a standard which will allow IBM maintenance to restart.

"It will be our responsibility to see that the engineering change-level and the whole condition of the machine is up-to-date," Eickhoff said. "We will do it out of our own resources and know-how. Our engineers, both those who are IBM trained and those that we will train ourselves, will be kept well up-to-date."

## Good User Prospect

From a user's point of view, the information obtained at the meeting is encouraging. The company is still in a formative period, but it may well be that Comma Corp., or other equivalent services, will make it much more practical for a user to consider obtaining peripherals outside of the hardware manufacturers, and also to look again at the economies of purchasing computer systems. It will be some months yet before Comma is really in operation, and facts are available to back up all the promises. The potential is clearly there and even that, by itself, is an important event along the path of user freedom.

For that, Comma people already deserve to wear those gold pins.

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# Are There Computer Community Leaders?

This is the computer age. You read and hear this in every media from the most erudite to the yellow press.

We, the computer community, are blamed for depersonalization and alienation. If computer people go off it front page news. At the same time, however, we are lauded for space feats and held to be the hope for future solution of society's ills. But, we are a community with out leaders. Except for an occasional speech by a corporation chairman extolling instant progress from the home, worldwide networks of information or other razzle dazzles that have no meaning for the present, the industry is silent.

But no one denies that this is the computer age.

However, in the executive offices of President Nixon is an Office of Science and Technology. It is composed of 20 to 24 members (the number varies) and is headed by Dr. Lee DuBridge, former president of Cal Tech. Among the members is not one representative of the computer community. Reminder: this is the Office of Science

and Technology  
Technology recently became the

## Huggins' View by Phyllis Huggins

first state to form an office of science and technology. There are 18 members. Not one of the members is from the computer community.

This writer recently interviewed Col. A.A. Aimes, the member of President Nixon's office responsible for representing our science among other disciplinary responsibilities. He is an experimental psychologist by background but has been deeply involved in scientific information and research activities with the Department of Defense.

There is no question but that he is aware of different activities in the federal government with which his office should interact.

He recently assigned Dr. Her-

bert Grosch of the Bureau of Standards to represent the U.S. in a European copious. He has asked Anthony Ottenger of the National Research Council to conduct a survey on the present status of computers in education.

We are not being neglected. But how much meaningful leadership and assistance can be given at this very high level to this most important technology by a multidisciplinary representative not directly related to the computer community?

When we asked why there was no computer community representative we were told, "We can't have every category represented."

Computer technology is just another category.

It is directly pertinent to our national problems and should be directly represented.

It is just that we appear to be a community without leaders. Where can leaders go if other disciplines and technologies are given priority?

The California state office was also interviewed. Here we were

told that the reason there was no computer representative in the office was because computers were "supportive."

That sounds as though we are viewed as a second class technology.

We help others; we implement the leadership of others. We do not lead.

As an example of who the "leaders" are, the following is a run down of the backgrounds of some of the members of the California Office of Science and Technology: vice-chancellor for research and graduate affairs, professor of civil engineering, laboratory testing expert, director of international population and urban research, professor of urban social policy and public health, dean of a medical school, professor of psychology, director of the Stanford Linear Accelerator Center.

These are all worthwhile fields. But is this, in itself, any reason why there is no computer representative of stature included?

Is there any reason why the computer community is not represented in Nixon's Office of Science and Technology?

# Ford Computer-Simulates Crashes for Safer Designs

By W.L. Bones

Special to Computerworld  
DETROIT — "Computer simulation of automobile crash situations allows a much greater range of test variables, is more reliable, and can be done for far less cost," says Vic Hopeman, director of the Ford Motor Co. engineering technology office. Ford has been simulating automobile crashes for six years.

Computer simulation techniques allow safety engineers freedom in designing, testing, and redesigning cars.

Using a model developed in conjunction with Cornell University, Ford's safety engineers simulate thousands of front-end accidents each year to study the effects on the occupants.

The cost savings, at \$3,000 per test vehicle, reach into the millions of dollars. "Beside," Hopeman added, "we couldn't find enough junk yards in Detroit to dispose of the wreckage."

This simulated "wrecking" permits the safety engineers to iden-

tify important parameters in a minimum of time and allows more precise and meaningful proving ground experience.

The safety research engineer uses an IBM 360/65 to run the simulations. Output is fed into a CDC 1700 equipped with Datagraph CRT terminals that permit the engineer to manipulate the results using various display techniques.

If the safety engineer needs hard copy output, he can take the tape to a Calcomp plotter or a Gerber flat bed plotter in the company's advanced computer system section and produce any size drawing required.

## Mundane Features

The study of apparently mundane features such as placement of seat belt anchors, length and width of seat belts, and type of fabric to be used require hundreds of simulations. For example, such experiments permit the best placement of the anchor bolt in relation to the average

size of the driver and his passenger.

Harold Brimley, executive safety engineer, Ford engineering staff, states, "This is the reason why the graphic display of the simulation is a most important tool in safety engineering."

"Forgiveness factor" is a favorite term used by Ford engineers in their studies to keep their cars from being accident prone. In their analysis of the factors surrounding accidents, Ford engineers have isolated 60 different conditions that can bear upon a crash.

These can vary from road conditions to wind gusts to driver experience. Within each of these categories literally hundreds of different variables can exist.

The engineer pumps these factors into the computer model, varying them constantly in an attempt to come up with the ideal design.

For instance, just how forgiving should the steering system be



Ford Motor Co. safety engineer seated at CDC Datagraph terminal preparing to begin simulated front-end crash.

when a driver makes a panic turn to avoid an oncoming car?

Based on simulations and outside tests, Ford's engineers determine what will happen if drivers whip the steering wheel over too fast or too slowly, sometimes creating skidding condition. This gives them data to take into consideration in the design cycle.

## Many Studies Undertaken

Controlled crush frames and front ends, collapsible steering columns, headlight intensity and direction, interior design factors, effect of outside environmental

conditions, and use of air bags are a small sample of the studies being undertaken by Ford safety engineers to design safer vehicles.

Computers are one of the tools used in these studies, the proving ground, laboratory, and test sleds are other methods, but as Hopeman puts it, "You can't test or wreck a car that hasn't been built. We can build a car with new safety ideas and wreck it over and over again in the computer without putting anything into hard metal. If it appears to be a workable idea, then we go on to test vehicles."

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# Polluted Air, Lung Destruction to Be DP Researched

STATE COLLEGE, Pa. — People, who breathe polluted air get more colds than those who breathe clean air, according to a recent U.S. Public Health Survey.

Whether or not this greater incidence of colds or other respiratory ailments is traceable to air pollution is the basis of a computerized research project underway at Penn State University. The three-year project is funded by a National Institute of Health grant.

Air pollution also may cause lung tumors and a destruction of the protective lining of the lungs. These and other effects of

air pollution are being explored here by researchers using a computer.

Dr. Rodney A. Rhodes, assistant professor of applied physiology and the principal investigator for the Penn State project, said that one year's research already has uncovered results that will be useful in establishing new air pollution control criteria.

"It has been established that large particles discharged in the air, including fly ash and other particulates, create an aesthetic problem, but are not necessarily hazardous to health," he said.

"The smaller non-visible particulates and gaseous materials, such as sulphur dioxide and nitrogen dioxide, represent the real, potential hazard."

To study the effects of air pollution, four test colonies of laboratory animals are exposed to controlled environments and examined medically.

One test colony of animals breathes filtered air; a second group breathes nitrogen dioxide; another, carbon particles; and a fourth, both carbon and nitrogen dioxide.

According to the U.S. Surgeon General's 1964 report, all these are contained in cigarette smoke. So in theory, an individual who smokes exposes himself to a greater amount of air pollution than a non-smoker.

Rhodes said, however, that his experiments are not correlating cigar smoking to colds. "A commonly quoted relationship compares living 24 hours under the heavy pollution of New York City to smoking two packs of cigarettes."

Data from the experiments is

fed into an IBM 360/67 at the University's computation center. The information, evaluated by the computer and printed in graphs, equations or in numerical values, tells researchers what is happening.

This computer-generated information is the basis of reports for the National Institute of Health and the Department of Health, Education and Welfare. Government agencies are looking to studies like this to establish acceptable levels of pollution for regulatory purposes.

## Land Valuations Soar Out of Sight, For 'Victims of Computer Error'

NEWBURYPORT, Mass. — "A computer upset things," is how the chairman of the Newburyport Board of Assessors recently explained wildly soaring property valuations.

But if there ever is a "computer burning," it may be sparked by newspapers which give them human qualities, like last week's *Boston Herald Traveler*, which announced, "Computer errors — Newburyport's property valuations soar."

Actually, Chairman Malcolm Smith now says that a programming error "probably" caused recent revaluation inaccuracies, but he can't be sure because the service bureau that generated

this small town's property listing "has already corrected" the errors.

The original corrections were found manually in Newburyport's file of "index cards," apparently satisfying about 100 of the town's 5,200 property owners who had seen their property "value" soar as much as 4,500%.

One property owner's six-room cottage, valued at \$3,800 when purchased almost 40 years ago, was assessed for \$179,000, and reportedly was taxed for \$77,000.

Smith adds that his faith in computers has not been shaken, and the town will continue to use the same service bureau.

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## Data Bank of 'Suspects' Will Aid Drug Crackdown

By Judy Dick

CW Staff Writer

SAN DIEGO, Calif. — The general crackdown on narcotics taking place all over the nation will soon be aided by a computerized data bank set up by the Bureau of Customs.

Information pertaining to private individuals suspected of as well as convicted of drug smuggling will be fed into the files. One Washington official has defined "suspected" as people "known or thought by the government to be involved in criminal smuggling conspiracies."

As with each of the new federal data banks came the affirmation, "This is strictly a secure type operation."

Although the files, set in secure land lines, will be directly attainable only by authorized customs personnel, the federal, state, and city police agencies are also permitted access to the information.

The Bureau of Customs has spent over \$2 million for the Burroughs' B5500 computer system to be used in this operation. The B5500, presently being installed in San Diego, will become operative March 15, 1970.

Burroughs claims the system is scheduled to expand nationwide to cover the entire Canadian border and international airports, as well as the Texas-Mexican border.

The Washington official responded that no announcement has been made on Canada and preferred not to discuss the subject at this time.

Comment or not, Burroughs says 37 TWX units will be strategically located throughout the nation, communicating with the B5500 system as well as with the FBI's National Crime Information Center (NCIC).

Over 100 TWX terminals will be used to stop the tremendous incidence of drug traffic and other contraband smuggling. Eighty-six terminals will be located in traffic lanes at the California-Mexico border. The government official claimed, "Smuggling goes on all the time,

and the only possible way to do a quick check of the 27 million cars crossing the San Ysidro border each year is through a computer."

Inquiries, based on license plate numbers and other identification, will be made to the

B5500 for information on wanted persons and stolen motor vehicles.

Grounds for suspicion are based upon markings or other signs of tampered auto parts indicating possible concealment of drugs.

## TWA Says Ticket System Not Far Behind Schedule

NEW YORK — Both sides are reporting "substantial progress" in the installation of Burroughs' largest on-line airline reservation system in world-wide TWA locations.

An airline spokesman here said that the contract, which calls for 2,700 CRT keyboard terminals in 150 locations, is "only slightly behind schedule," despite conflicting published reports.

TWA said that substantial progress is being made in developing adequate software, and Burroughs reports that most of the hardware has been paid for. Besides the 2,700 terminals, the hardware includes three, and possibly four, B8300 CPUs, the commercial version of Burroughs' defense DB30.

Although not Burroughs' first airline experience, it is the largest to date.

The company had previously installed passenger name record systems for Air Canada and United Air Lines.

These systems used a business version of the DB25 message-switching computers used by the Air Defense Command.

After 3-1/2 years, United is still using "commercial" DB25, but is apparently mulling their continued usefulness in its attempts to find a replacement for Univac, whose on-line reservations contract was recently cancelled (CW, Feb. 11).

### Name Change Makes Mix-up

TAMPA, Fla. — Seald-Sweet Growers received a letter from a national magazine soliciting a subscription.

The letter was computer labeled to Mrs. Citrus E. Florida, Box 2349, Tampa, Fla., instead of to The Florida Citrus Exchange, former name of Seald-Sweet.

Seald-Sweet officials said they don't know how the key puncher came up with the "Mrs." but think it may have something to do with the magazine's being a woman's publication.

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## Computerized Basketball Statistics Used by ABA

MINNEAPOLIS, Minn. — Control Data Corp.'s "Cybernet" service and the American Basketball Association are cooperating in a venture to provide virtually instantaneous computerized statistics on ABA teams and players to sports fans and media throughout the nation.

The service, a nationwide hookup of data centers utilizing large and super-scale computers, is able to compute all league statistical information in 4 to 5 seconds using a CDC 6600 computer at the Houston data center.

This task formerly took league officials nearly 130 man-hours per week to accomplish. With computerization, data preparation reduces this time to a mere 30 hours.

Each Thursday league officials compile all data on games played during the preceding Thursday-to-Wednesday time period. This information is then fed into a computer in Control Data's Dallas data center, which transmits the information to the CDC 6600 in Houston.

There, statistics are computed, year-to-date statistics are updated and the 6600 returns the information to the Dallas computer for print-out in seconds.

Upon receiving the updated statistics, league officials immediately mail them to 1,000 sportswriters, broadcasters and other league and team officials throughout the U.S.

Types of information being computerized include games played, minutes played, number of two and three-point shots made, number of free throws, and team percentages on shots of each type made. Defensive statistics such as rebounds, assists and personal fouls are also provided.

The computer also charts defensive and offensive performances of individual players.

Statistical information for the entire ABA includes team-by-team statistics, individual scoring leaders, rebound and assist leaders.

**Wind Blows-Computer Froze**  
BLOOMINGTON, Minn. — The local sportswriter who deplored the computerized "instant analysis" of football situations has been saved by the weatherman. The sportswriter berated the scheduled use of a computerized scoreboard during the National Football League's championship game here.

The scoreboard was to be fed "situations" such as down, possession, time remaining, etc., and then portray — for crowd, offense, and defense alike — what each opposing team did when a similar situation arose during the regular season.

But the Minnesota Vikings were playing the Cleveland Browns in nine-degree weather, and the computerized scoreboard — and the officials' whistles — froze.

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## L.A. Colleges Acquire Central System

LOS ANGELES — Acquisition of a central computer system for the Los Angeles Community Colleges, at a first-year cost of \$326,000, has been approved by the board of trustees.

Following delivery in March and installation in junior college district headquarters at 2140 West Olympic Blvd., the data processing system should be operational by October, said Robert C. Cline, chairman of the board finance committee.

There will be satellite terminals at each of the district's eight campuses: City College, Valley College, Pierce College, East Los Angeles, Southwest Harbor, West Los Angeles, and Trade-Tech.

The system will be used mainly for administrative and instructional purposes. Besides tying indirectly with data processing instructional use, the computer will shorten time for report preparation. Student programs will be compiled to provide computer technology courses and to aid in such courses as mathematics and social sciences.

The central office computers will allow administrators to maintain more efficiently personnel payroll, budgets, retirements, purchasing, financial accounting, and student accounting.

Each college will be responsible for its own records, student registrations, records, and faculty rosters with a CRT in the central district headquarters available to pull student transcripts from

files, according to Dale Hargin of East Los Angeles College's data processing section.

Although a definite manufacturer has not as yet been determined, the IBM 1130 is a prime candidate, said Cline.

Third-generation equipment will be used — keyboard attachment, 256K core size, — which is disk oriented while also reading much card input and output.

With its own computer, the district will be able to cancel its present \$140,000 yearly series 53-60 contract with the Los Angeles City Board of Education

for processing its payroll and accounting procedures.

A minimum of 120 days of parallel application is expected, according to a spokesman for Dwight Cadbury, director of the central system.

The Board also hired the Santa Monica consulting firm of Systems Development Corp. for \$14,000 yearly to help the district "to get the best use of the computer."

Bids for leasing the computer equipment will be released in about two weeks.

## Says Utility Regulation System Needs Computers

WASHINGTON, D.C. — Senator Lee Metcalf (D-Mont.) has urged the administration to computerize an "antiquated system of reporting" on utility regulation.

In a recent letter to Budget Director Robert F. Mayo, Metcalf called for the "development of a regulatory ADP system" to eliminate the "myth of utility regulation."

Metcalf said his Utility Consumer's Council Act, presently before the Senate Intergovernmental Relations Subcommittee, would establish public rather than corporate control of sky-rocketing utility rates.

Citing state and local govern-

ment "waste" in seeking information needed for utility regulation, Metcalf urged Mayo to provide funds to establish a Utility Consumers' Council in fiscal year 1971.

He said that most utilities already have computers "far more sophisticated than necessary to provide, quickly and in detail, the information needed by regulators and parties to rate cases."

Metcalf said that the present "job of information-collection" was "time-consuming, costly, and in some cases an impossible task."

He seeks a "comprehensive" system of ADP "for utility regulation commissions."

**IT'S  
 WHAT'S  
 UP  
 FRONT  
 THAT  
 SYNC'S.**



## Pennsylvania Police Computer-Guarded

HARRISBURG, Pa. — Pennsylvania is getting ready to replace its state police communications network with a computer system designed to provide information within 30 seconds and safeguard the lives of policemen.

When the eight phases of the transition are completed over the next two years, all Pennsylvania law enforcement officers will be just a half-minute removed from the best criminal reference information in the U.S.

"If this program had been in effect, at least two policemen's lives could have been saved in the last few months," says Major Albert F. Kwiatek of the Pennsylvania State Police.

Kwiatek, 44, the youngest major on the force, is the officer in charge of the Commonwealth Law Enforcement Assistance Network (Clean). He was put in charge of a study program four years ago when it became obvious that most of the state police communications equipment was obsolete.

Clean emerged from the study. A number of the nation's leading electronics firms are now bidding on the transformation.

Until the bids have been evaluated, the cost of Clean and where the money is coming from remain conjecture. The financial strain on the state likely will be eased considerably with federal funds distributed through the Pennsylvania Crime Commission. Kwiatek minimizes the cost factor.

"We are talking about an initial outlay of about \$50 per man to help safeguard the lives of some 25,000 law enforcement officers in Pa., including about 3,000 state policemen," he said.

Recently, in two separate instances, a policeman stopped a car for a routine check. Each time, the car was stolen and a fugitive was at the wheel, and each time the officer was gunned down as he approached the car. Once the new system is installed, a state policeman can radio his substation or a city policeman his headquarters and learn within 30 seconds whether the car he is following has been stolen.

Here is how the new system will work:

A dispatcher, upon receiving

and coding a call, presses a button and the request is flashed to the data bank maintained by the FBI's National Crime Information Center (NCIC) in Washington, D.C.

The NCIC three-year-old network stores nearly two million records on fugitives, stolen cars, boats, license plates, firearms, and identifiable stolen property.

According to Pennsylvania State Police, a full-duplex message switching system will be installed at 92 state police stations and about 200 city police stations. The information retrieval system will be interfaced with the Internal Revenue (IRS) and FBI. Access will be provided for all Pennsylvania law enforcement agencies, a spokesman said.

## Firm States Software Industry Not Mature Enough for Its Publication

NEW YORK — System Interaction Corp. has announced its new service, *Software Contractors: Credentials and Capabilities*, will not be published at this time.

Michael J. Neuman, vice president, stated that although sales and inquiries for the new service were excellent, the decision not to publish had to be made. "It is obvious," he said, "that the software industry has not yet matured enough to be candid about its own character and capability."

Neuman went on to say that there were instances where a company reported contradictory sales figures, fee schedules, and technical abilities. Staff make-up and strengths were also found to be misrepresented, often dramatically.

"There certainly is a need for the service," Neuman said, "but just as certainly there is no efficient means of verifying the information. We hope the software contractors will mature in the near future so that this much-needed service can be offered in a meaningful manner."

When interaction between terminals and your operating system slows you down, it's time to tie into our L-64. It's the front end processor that accommodates terminals of un-like baud rates without reduction of data throughput. Take it from your computer. The L-64 lets you drive more data through your CPU. Systematically.

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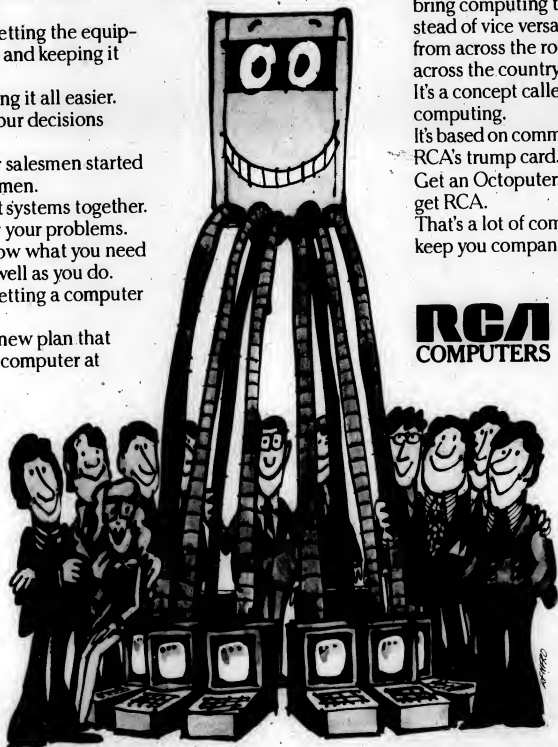
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# States Call for Tighter Credit Bureau Regulations

By Joseph Hanlon

Cow staff writer

**BOSTON**—Tighter regulation of credit bureaus is being called for in at least three states.

Credit bureaus would be required to tell a person the name of every company that has received a credit report on him in the last five years under a bill filed by Massachusetts Governor Francis W. Sargent.

Sargent's bill would also require that credit bureaus allow a person to add a statement of up to 100 words if he disputes an item in the credit file, and would require the credit bureau to distribute the statement, without charge, to all previous and future recipients of the disputed item.

Three bills have been filed in the Massachusetts legislature to require credit bureaus to send copies of reports to the person reported on. Another bill would require that a company which notifies the credit bureau of a delinquent account also be required to notify the bureau of final payment. Similar bills were killed in committee last year, so the likelihood of passage is questionable.

Last year Massachusetts passed the first state credit bureau regulation in the country. This law requires that a person be told if he is refused credit or employment based in whole or part on a credit report, and that he be given the name and address of the credit bureau.

## 'Protect Consumers'

Bills filed in the New York and Maryland legislatures this year both include provisions similar to the Massachusetts law. In supporting the New York bill, state Attorney General Louis J. Lefkowitz charged that "the rights of consumers have been treated with reckless abandon by some credit reporting agencies who have damaged the credit ratings and reputation of consumers through the issuance of erroneous reports and comments concerning them."

Lefkowitz said that the Bureau of Consumer Protection of his office has received numerous complaints from individuals who have found that credit was denied to them based on incorrect information furnished to vendors.

## Computers Topic for Youth Art Contest

**SOUTHBORO, Mass.**—Children's impressions of computers is the subject of a nationwide art contest currently being sponsored by Data General Corp.

Children from preschool age through 12 are eligible to submit their graphic interpretation of what a computer is. Drawings, crayon portraits, watercolors, sculptures, or any other method of expression a child might use will be acceptable.

Judges for the contest include Walter H. Afliner, art director of *Fortune* magazine; Toshihiro Katayama of the Harvard University Carpenter Center for the Visual Arts; James F. Moore, exhibits director of the Museum of Science in Boston; and Mrs. Signe Hanson of the Children's Museum in Boston.

Top award for the contest is a \$500 scholarship fund for the best entry regardless of age. A second prize of \$200 will also be awarded. In addition, there will be first prizes of \$100 and second prizes of \$50 in each of four age categories: preschool, five through seven, eight through nine, and 10 through 12.

The deadline for entries is March 21, and winners will be announced on April 7. Entries should be sent to Data General Corp., Contest, P.O. Box H, Southboro, Mass. 01772.

Additional provisions of the Maryland bill would sharply restrict the length of time that information could be kept in credit bureau files. Degradatory information based on an investigation could not be included in a report more than one year after the investigation. Records of accounts placed with collection agencies and much other adverse data could not be reported more than three years after the offense. Suits, judgments, tax liens, bankruptcies, and felony convictions could be reported for longer periods of time.

Finally, the Maryland bill would require credit bureaus which compile "public record information," primarily suits and other court cases, to keep such information complete and up to date. This would be a sharp change for credit bureaus, which usually record only the filing of suits, but not their disposition.

Proposed laws in all three states, as well as the national law proposed by Sen.

William Proxmire (D-Wis.), would permit an individual to see the contents of his file, and to correct errors. However, in case of an error, the burden of proof would be on the individual.

## Proxmire Bill Stalled

Meanwhile, the Proxmire Fair Credit Reporting Bill is still awaiting action by the House Banking and Currency Committee. A committee aide said that the bill definitely would be considered this year, but that the committee was now tied up with hearings on the "mortgage crisis"—the problem that money is not available for home construction—and he noted that "we are anxious to save the economy" before moving on to other bills pending before the committee.

The Proxmire bill has been criticized by many people as being too weak, and the committee aide noted that "most of the push to consider the bill is coming from the Associated Credit Bureaus (ACB) who

want us to take the bill and pass it as is."

The Proxmire bill, passed in the Senate November 6, is similar to the state bills in many ways, but generally weaker. For example, it would require that a person be told if he was denied employment or credit because of a credit bureau report, but only if he specifically asked.

When he originally proposed his Fair Credit Reporting Bill, Proxmire noted that he was particularly concerned about the computerization of credit bureaus. He warned that in addition to freezing-in errors already in the files, computerization would probably add more errors due to bugs that enter during the conversion period.

Credit bureau computerization has already reached two of the states where regulation has been proposed: a New York City credit bureau is already computerized and one in Boston will be this year.



## Introducing: The 3 Minute Problem.

Finally, after years of preparation and laboratory testing Programming Sciences Corporation announces the introduction of its revolutionary "3 Minute Formula" for the quick relief of headache, stomach upset, nervous tension and all other E.D.P. Systems-related problems.

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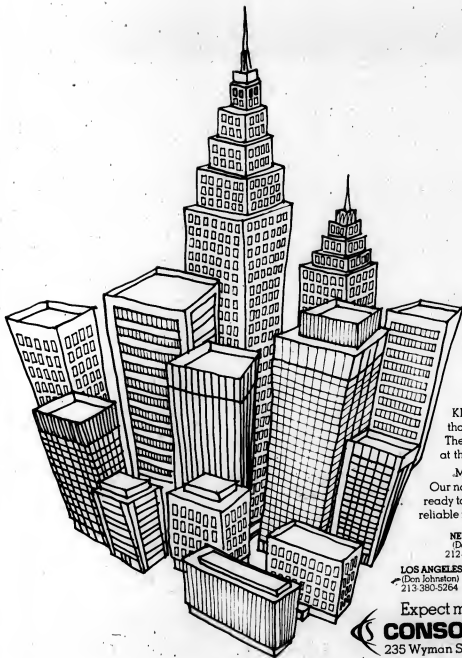
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servomechanism instead of a hydraulic system. That means higher reliability. You can plug it into an existing 2841 control unit with complete confidence—without altering disc packs. Or immediately intermix the 9311 with other similar disc units. Should service be needed, you can always count on the highly trained, worldwide Friden Customer Service Organization.

The 9311 is backed by the leasing specialists of Talcott Computer Leasing—offered with a variety of lease programs to bring you the greatest possible savings. Get the details now. Contact your local Friden office or write to: Friden Division, The Singer Company, San Leandro, Calif. 94577.



## Talcott

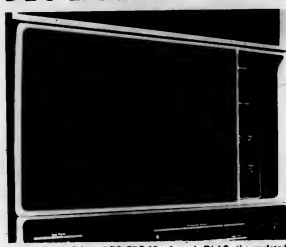
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Page 23

# DEC Enhances PDP-8 Basic, Adds 'Pip' to PDP-12



Users can 'talk' to DEC PDP-12s through Dial-2, the updated version of its system software.

MAYNARD, Mass. — Digital Equipment Corp. has improved the software for its PDP-8/L time-sharing system and has announced a new version of the display software for the PDP-12.

Improved scheduling and more efficient job throughput are the major improvements in the 8/L monitor. These improvements improve the response time, according to the company.

Operator communications were improved by allowing the operator to communicate with and control individual users connected to the system. Extensive new documentation is now available to assist users in utilizing the system, the company said.

## Basic Improvements Qualitative

The Basic language improvements are said to be qualitative rather than quantitative, measurable, according to DEC.

The company said that the main concern was with the user conventions and limitations, rather than with language features.

## PDP-12 Improvements

Dial-2 is the new version of the display-based software system for the PDP-12, the company's most recent scientific and business computer.

The new features offered include character editing, overlapped tape I/O and a Peripheral Interchange Program (PIP).

Dial-2 (Display Interactive Assembly Language) provides users with the tools to edit programs, store and manage program files, and assemble programs in conjunction with the system's built-in display system, the company says.

Character editing is controlled by a moving cursor. The cursor

is controlled by a "joystick" that the user moves to move the cursor. Characters or entire lines may be deleted or modified using the new editor.

Tape overlap allows the display and the tape unit to run concurrently. Users can enter data through the display system while the system is transferring data to or from the tape stations, the company says.

PIP gives the operator control over data transfers between devices in the system. Data can be moved to or from the Linotype, Teletype, paper tape, card reader or printer directly under the operator's control.

The display guides used with PIP inform the operator of the current transfer status during operation.

The company feels that these improvements allow users much more flexibility in using the system, particularly in program preparation and debugging. Additional pseudo-assembly instructions for compile-time execution permit users to develop macros and compile various parts of a program conditionally.

# Simulation Service Gathers Data on CPUs, Software

CHICAGO — A.T. Kearney & Co. is offering a complete consulting package for machine selection and simulation based on the Computer Aided Systems Evaluation (Case) program, developed by Computer Learning Systems Corp.

The service includes data gathering, input preparation for the simulation run, equipment evaluation, and the application of a firm's skills in systems design and management, according to Donald E. Ramlow, company vice-president.

Case can simulate all aspects of hardware performance and capability. Facilities include: multiple programming, multiprocessing, immediate access, and job mixes from business, scientific, real-time, and communications applications in any combination, the company says.

With what Ramlow describes as "the distressingly frequent need to increase computer power with no guarantee that... [such an increase] will yield the desired return," there is a real demand for better tools to assist in computer selection for specific job

and application environments.

## Case Simulates Software

Case can also simulate software and applications systems, giving users the opportunity to examine the efficiency of their existing programs. Input data could be altered to represent proposed design changes, and the simulation output would indicate the resulting changes in performance and resource requirements.

New systems can be modeled while they are in the design stages. This permits users to improve the design without the complete investment in programming and then reprogramming which would be necessary after system completion, Ramlow said.

## The Cost Is Reasonable

When asked about the expected costs of such simulations, Walter Schrader, a company official, estimated that the smaller runs would cost about \$6,000. He added that the average simulation project would cost from \$15,000 to about \$20,000. The charges are based on the consult-

ing time needed to obtain the data for the simulation plus the costs of running the simulation on a Computer Learning Sys-

tems computer.

The company's headquarters are located here at 100 S. Wacker Drive.

# Autocoder to AL Translator Service Can Now Convert More Instructions

NEW YORK — Recent enhancements to Totaltran, an Autocoder to Assembly Language translator service for IBM 360 users, include the ability to handle Modify Address instructions, seven-position B-register instructions in all forms, index register manipulation, full and partial chaining regardless of the operation code, and word-mark-controlled instruction NOPs.

The service, offered by CPU Management Advisory Corp., is guaranteed to produce 90% conversion or the company will return the resulting converted program free of charge, according to company President Peter Colgan.

## Detailed Improvements

Specific improvements include the ability to handle the Modify Address instruction when used to alter data fields, addresses, and index registers (including modulo 15 arithmetic). The Store B-register instruction can be completely translated when used to store addresses into index registers, store values into index registers, increment index registers, and zero index registers.

Address constants, DSAs, or literals are converted and then grouped together. Their addresses are stored in the converted instructions. Instructions that use operation codes as data fields are converted to use the sense of the operand alteration.

Complete indexing, asterisk-displacement addressing, operand indexing, and symbolic length attributes are also processed correctly by the current

version of the translator.

In addition to translation, the service includes an interrupt handler to bypass data exceptions and programming errors during testing and execution. Cobol-type comments are generated where comments are currently lacking.

Three levels of service are offered:

a simple machine disassembly of the object program into an Autocoder source program; conversion of the Autocoder source into Assembly Language; and complete check-out of the resulting program to guarantee operation.

Company offices are located here at 853 Broadway.

# 'Trans/360' Calculates Economical Shipping Routes to Destinations

ST. LOUIS, Mo. — Trans/360 calculates the most economical shipping routes between multiple origins and destinations, according to McDonnell Automation Co., the developer.

Written as a linear programming system, Trans/360 is available to IBM 360 users for \$1,500. The program is written in PL/I, and requires 128K of memory.

Operational features include free-form input, automatic balancing of supplies and demands, and the ability to save intermediate solutions for decision analysis as alternate possibilities, the company said.

McDonnell also processes Trans/360 runs on its 360 65/75. Attached Support Processor

Multiprogramming with a Variable number of Tasks (MVT) system here, as a service to customers, data can be brought to the computer site, or transmitted over terminals from user offices.

As a demonstration of Trans/360's speed, McDonnell said that the 65/75 system processed 186 client problems, each with 14 origins and 119 destinations, in 15.7 minutes of 360/75 time. Trans/360 is claimed to be particularly suited to such applications as multiple warehouse distributors, petrochemical manufacturers, food processors, and publishing operations.

The company, a division of the McDonnell Douglas Corp., has offices here in St. Louis.



"You Were Asking About His Initial Response to Our Proposed Conversion..."



"Line 3 on Your Right, Sir - For Express Computerized Service..."

## Official Air Guides Offered as Data Base

OAK BROOK, Ill. — Companies supplying equipment to aircraft manufacturers, airports, air travel planners, and other concerns interested in projecting air traffic can now access a data base of air travel information provided by the Transportation Services Division of the Reuben H. Donnelley Corp.

Updated monthly and stored on tape, the data base contains the complete information published in the Official Airlines Guides, (OAG) also from the same firm.

The data is available for both current and past months of the OAG, and can be formatted to suit an individual application, the company says.

Particular applications suggested include equipment forecasting, market analysis, schedule analysis, route analysis, and inventory analysis.

Company offices are located here at 2000 Clearwater Drive.

## 'Idliiom' Includes Compilers, Applications

MOUNT KISCO, N.Y. — The \$80,000 Information Displays Inc. Idliiom display system may now have the largest and most comprehensive library of software available with a display-based system, according to the company.

Operating systems, languages, subroutines, text editing, and applications software are some of the available packages.

The Master Operating System (MOS) acts as a communications link between the built-in computer system and the user. It handles system I/O, manages the assemblers and compilers, and provides debugging software and routines to assist in system maintenance.

Idliiom offers an Ansi Standard Fortran (IV). Additional features include graphic subroutines and completely relocatable object programs, the company said. Two subsystems, the Idliiom Assembly System (Idas) and the Data Assembly System (DAS), provide for the preparation of assembly language programs compatible with a macro language. DAS also provides Fortran-compatible outputs and can access Fortran subroutines.

The Grid subroutine library draws three types of graphs — linear grids, logarithmic grids, and polar graphs. The Trak program supports the system's light pen, provides a tracking target for each point in the path of the pen, and can allow the user to draw portraits.

Other packages include a Text Editor (TED), a debugging package (AID), a hardware diagnostic package (Maintain), a facility diagnostic package (Medik), several demonstration programs, and a large Fortran subroutine library for standard Fortran functions, the company says.

The company will also develop specialized software applications for customers at consulting rates. Company offices are at 333 N. Bedford Road.

## System for Membership Organizations Supports Publications, Accounts, Statistics

COLLEGE PARK, Md. — Large membership organizations can process membership accounts and subscription fulfillment and obtain distribution statistics using a package available from Delta Data Systems Inc.

The system prepares cash journals, receivables, billing, membership listings, cancellations, new membership cards, membership renewal bills, statements, publications labels, and various statistical reports on different types of distributed goods within the membership, according to Delta.

Different types of membership and different chapters and regions can be handled by the package. Insurance information can also be included in membership processing.

The company is located at 9903 Rhode Island Ave.

## Loans Automated For Smaller Firms

CHICAGO — Small firms that cannot justify the installation of a system to handle level-payment loans such as mortgages can now utilize a new service offered by the Bankers Business Services Division of the Cummins-Chicago Corp.

The service is a ledger and remittance system for any type of level-payment, including interest-to-date loans of the type frequently used for conventional mortgages, land contracts, and other loans.

Billing is on a per-account basis with no minimum charge. The service provides a set of ledger cards, a window envelope for mailing the book to the customer, and a letter of transmittal for each loan.

The ledger cards show the balance each month, the amount of interest, and the amount applied to the principal.

Cummins-Chicago provides filled-in payment books and pre-computed ledger cards to lenders who cannot justify stocking the payment books in the many loan terms needed or the cost of the ledger card processing equipment.

The company is located at 4740 N. Ravenswood Ave.

## Assists Fund Raising

MONTGOMERYVILLE, Pa. — A Gift Reporting and Information Processing System (Grips) is available to support fund-raising campaigns of colleges and universities and to maintain alumni and prospect records from International Data Applications Inc.

Grips is an integrated information system adaptable to an institution's individual requirements, the company says. The system maintains a set of data files related to donors, accounts, and statistics for gift processing and selective mailing.

## NCR 400s Assembler

DAYTON, Ohio — The National Cash Register Co. has developed a programming language for use with its 400 series electronic accounting machines.

The assembler permits programs for specific business applications to be written with ten in basic English, according to NCR. The symbols: English program is then punched into cards or recorded on magnetic tape and entered into an NCR computer.

## Logically speaking... data input errors eat up your company's profit picture.

Make no mistake about it... computer time costs money and data input errors eat it up.

So, logically speaking, you should cut out the input errors. The LC-720 KeyDisc Data Input System minimizes errors with point-of-entry editing and correction. That keeps your computer humming. Optimizes systems throughput. Reduces idle systems time and costs.

But that's only part of the cost cutting job it does.

The LC-720 employs a computer time-shared input which can handle the data input from up to 60 keyboard operators... all entering or verifying separate jobs and applications. That alone can save you as much as 50% on your costs.

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disc. Plus a totally compatible 7 or 9 track magnetic tape output. That means total security and high-speed random access of data.

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## LC-720 KeyDisc System



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# does your data entry system have cartridge and program card loading?

The Cybercom Mark I key-to-tape encoder uses a card for program loading to control keyboard operations and a 1/4 inch tape cartridge for temporary storage of data to allow off-line pooling.

This means that changing of record format is rapid and error free. The features have been designed to provide a high efficiency factor for both small and large jobs.

The program automatically controls upper and lower case shifting, starting and ending of fields,

skip, duplication, and left-zero operations. It is rapidly read into the Mark I memory by an optical reader.

Use of the program card and cartridge tape allows quick format changing for flexibility and convenience.

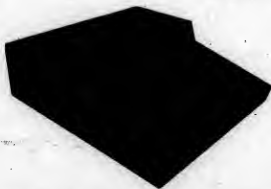
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## Peripheral Performance Can Improve With Monitor

GREAT NECK, N.Y. — Claimed performance improvements of 25% are possible with a new peripheral performance evaluator developed by Computer Efficiency Corp., of Miami Shores, Fla.

The system will run on any IBM 360 and does not operate under the various operating systems provided by IBM, the

company says. The package measures the actual performance of any selected peripheral device against the rated performance for the device supplied by the manufacturer.

The program is self-loading and requires only two control cards, the company says. The program requires about 15

seconds for calibration after loading. Each peripheral to be tested will require an additional 15 seconds, the company claims.

The output is a report displaying the actual, as opposed to rated, speed and the percentage of variance. Presumably, the package contains the rated device speeds

as built-in data.

### Special Capabilities

Using the peripherals monitor, users can identify devices that do not meet rated specifications and select them for better maintenance. Users can also maintain performance trends to indicate potential trouble areas, spot degradation stemming from engineering changes, and verify proper installation of new engineering upgrades. The monitor can provide realistic run time data for job execution, analyze independent equipment accurately against mainframe equipment and optimize the use of the device by allowing an operator to select the best performing devices for longer jobs, the company claims.

The peripherals measurement software sells for \$4,000 and is also available on lease.

The monitor is available from National Software Exchange at Station Plaza East,

## System Connects 1800 to Clinical Lab Equipment

WHITE PLAINS, N.Y. — The IBM Clinical Laboratory Data Acquisition System links an IBM 1800 to dozens of labora-

tory instruments in hospitals for automatic monitoring of patient test results.

The program runs on the 1800 data acquisition and control system, a computer that will accept over 20,000 input signals per second, according to IBM.

The laboratory system collects, analyzes, and verifies data extracted from specimens by instruments such as automatic blood testing equipment. Simul-

taneously, the system monitors each of these instruments to ascertain proper operation.

As each test run is completed, the system prints the results for verification and submission to the patient's physician.

The clinical laboratory data acquisition system runs under the Time Sharing Executive (TSX) and is available as a program product for \$100/mo from IBM.

## State Credit Union System Provides Full EDP Services

POMONA, Calif. — State-wide data processing for credit unions is offered from the California Credit Union League's subsidiary, League Data Processing.

The credit union service provides complete data processing, accounting, and management statistical services through this new service.

The day's transactions are transmitted through a Digitronics Data-Verter to the Pomona-based DP center. The data is processed overnight, and the updated account records are stored in the company's IBM 360/30 files.

When a credit union needs account information, it dials the center and enters the account number over a Touch-Tone telephone pad. The account status is returned from an audio response system at the center.

According to the League, the center will be converting between 20,000 and 40,000 accounts per month to the new system throughout this year.

Service information is available from the company's offices here at 2322 S. Garey Ave.

## Bethtel Corp. Offers Users APL Via T/S

SAN FRANCISCO — Another time-sharing company is entering the APL market by offering APL through its IBM 360 based here. Bethtel Corp. is offering this new service in addition to its existing time-sharing service from a GE 635.

Services offered now include programming and computer application packages on the 635.

According to Dr. Andrew D. Sujata, head of the company's computer operations, the intent is to apply the experience of the company's experts in accounting, cost accounting, scientific, and engineering applications. Other areas include project control, budget management, and various engineering science disciplines.

The system is currently linked, through multiplexers, from Los Angeles, New York, Washington, D.C., and, here, in San Francisco. Both time-sharing and remote batch are available through all locations, the company said.

Company headquarters are located at 50 Beale St.

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TEACHING AND STUDYING IN CONVENTIONAL SCHOOLS FOR USE BY STUDENTS AND TEACHERS. REMOTE COMPUTER... OVER THE TELEPHONE NETWORK. STUDENT ANSWERS TO TELETYPEWRITER... WHEN THE ANSWER IS CORRECT, COMPUTER GOES ON TO MORE DIFFICULT MATERIAL.

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TXW

NEWS TO

COMPUTERWORLD FAST

TXW 710-335-6635



# 'Auto-Gen' Produces Cobol Source Programs for 360

DOWNEY, Calif. — The Auto-Gen package produces Cobol source programs for IBM 360 users, according to the developer, Computer Guidance Associates.

The package generates file creation and maintenance programs from parameter cards. The program produces a complete Cobol source program. The output can then be further modified by relatively simple programming to incorporate any special routines an installation might desire, the company says.

The package, which requires at least 32K on any 360, sells for \$3,200 and is available from the company's offices here at 8221 Third St.

## On-Line Testing

ANN ARBOR, Mich. — Prospektes, an automatic testing program for the RCA Spectra 70 computer, is available from Software Assistance Corp.

Originally developed by Owens-Corning Fiberglass Corp., Prospektes provides auto-

matic compilation, testing with generated data, and overrides to bypass errors, the company says.

The system is said to test programs completely without operator intervention.

The company is located at 3372 Westlawn Ave.

## On-Line Data Bases

SILVER SPRING, Md. — Compask/360 offers users the opportunity to communicate directly with data bases over either CRT or hardcopy terminals, according to the developer, Computer Audit Corp.

Compask runs under the Operating System on the IBM 360 in any configuration. The resident machine must have at least 128K.

Users can both access and update data bases. In addition, Compask will monitor the execution of user-written conversational and update programs. Any 360 file format may be used for data bases or files

accessed, the company says. User-written programs can be in Fortran, Cobol, PL/I, Assembly Language, or RPG, according to the company.

The package sells for \$40,000 with a \$10,000 charge for installation. Complete documentation, maintenance, user manuals, and training seminars are included in the price.

The company is located at 1320 Fen-

offer communications and interactive applications simply, according to the company.

Based on a proprietary communications design technique, the package will support any type of communication-based application under the various 360 operating systems.

The company's offices are located at 4815 West 77th St.

## Software Bits & Pieces

wick Lane.

## Communications Software

MINNEAPOLIS, Minn. — Transcode, from Computer Terminals Inc., provides IBM 360 business users with the ability to

## Input Validation

NEW YORK — The Validator package parameterizes the input verifications process, cutting costs for programming, according to Data Management Services Inc., the developer.

The package checks for non-numeric fields, blanks, field ranges, and takes hash totals and batch totals. Parameters are in the form of simple input cards.

Validator will process data transcriptions, file reformatting, file conversion, and other types of consistent data manipulation, the company says.

The package sells for \$5,000, and requires at least an IBM 360/30. The firm is located at 8 West 40th St.

## Income Tax Preparation

RED BANK, N.J. — Tax consultants, accountants, banks, and other organizations preparing federal income tax returns can take advantage of a new tax preparation service offered by the Transnet Corp. over its time-sharing network.

The final output can be typed either directly on the federal forms, or it can be printed in columnar fashion for later transfer to IRS forms. The average return, the company says, is completed in under 10 minutes.

The company's offices are located at 60 English Plaza.

## Off-Line Varian Assemblies

LOS ANGELES — Varian 620/i users can now assemble their machine language programs off-line on the IBM 360, Standard IC-6000, IBM 7094, or CDC 6400/6600, by using a special cross assembler package.

The package is written in Fortran and accepts Varian DAS assembly language statements as input.

The program will produce either 16-bit or 18-bit words, can batch assemblies, and can be run for a cost comparable to that of the 620/i, according to Code, Inc., the developer.

The program costs \$750, and is available from the company's offices at 8939 Sepulveda Blvd.

## Detap For the BS500

SAN FRANCISCO — Information Management Inc. has modified its Compact Detap package to run on the Burroughs 5500.

Detap, a decision-table processor for generating Cobol source programs from decision tables, comes in three versions. Compact Detap is the middle-price version, and sells for \$9,500 the company says.

The price includes an on-site training course, user's manuals, an instructor's guide, and one year's maintenance.

Compact Detap is upward compatible with full Detap. Detap includes additional options including trace capabilities, formatted tables, mixed entries, and code optimization to improve execution times.

Full Detap sells for \$14,500. Basic Detap, a smaller version without initialization and dependent condition processing, sells for \$5,500.

The company's offices are located here at 447 Battery St.

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Remember. Next time you're moving information, any kind of information, no one knows more about moving it than the people who run the anywhere, anything, anytime network.



## Magnetic Tapes Available for Lease

NEW YORK - Time Brokers Inc. is offering three leasing plans for magnetic tape.

The tapes are certified and will be replaced at once if they do not perform to normal industry standards, according to the company.

Tapes can be rented for periods of a month, but the company gives discounts over 50% for long-term users. Rates depend upon the length and volume of the contract and range between \$5.84 and \$2 per 2,400-ft reel of 1/2 inch tape. Both 800 bit/in. and 1,600 bit/in. tapes are available for immediate delivery, according to the company.

Time Brokers Inc. is located at 380 Lexington Ave.

## Tape Cassettes Can Be Searched at 120 In./Sec

MOUNTAIN VIEW, Calif. - A digital magnetic tape cassette is designed for use with key-to-tape terminal equipment and minicomputers.

### dp accessories

The manufacturer, Information Terminals Corp., states that the cassettes are available with 300- and 150-foot tape lengths that are certified after final assembly.

The cassettes are designed, the company says, for operation at search speeds up to 120 in./sec, forward and reverse, and at read and write speeds up to 15 in./sec.

External dimensions conform to Phillips standard cassette specifications, the company continues, but internal improvements are said to result in smooth tape

packing and tracking with tight dimensional stability. Computer grade tape is utilized, reportedly permitting high bit-packing density.

The cassette with 300-ft tape length costs \$8.50. The 150-ft tape length sells for \$6.40. With quantity orders, the price decreases. The cassette is available for immediate delivery.

Information Terminals Corp. is located at 1160 Terna Bella Ave.



Digital Cassette

## Two Form Stackers Accept Printer Outputs

DALLAS - Two form stackers offered from the Data Communications Systems Division of University Computing Co. accept printer outputs at computer installations.

Designed for UCC's Cope (Communication Oriented Processing Equipment) line printers, the stackers with adjustable pa-

per racks handle paper widths of four to 18 inches.

One model, the F0011, will accommodate printers operating at speeds up to 600 line/min. This model has no moving parts and sells for \$165, according to UCC.

The other model, the F0013, can handle output from machines printing up to 1,500 line/min. The device includes an electric vacuum unit to allow for smooth operation at high speeds, the company stated, and costs \$450.

Data Communications Systems Division, University Computing Co., is located at 2659 Nova Drive.



F0013 Form Stacker

# It's made time-sharing a graphic art.

The new time-share terminal, Hewlett-Packard's answer to the graphic time lag, HP's graphic terminal picks up where the Teletypewriter leaves off and provides a revolutionary new capability: in-house graphic plotting of all time-share computer data. Instantly. Accepts time-share EIA ASCII inputs from the Teletypewriter.

The HP 7200 Graphic Plotter generates visual presentations of mathematical and engineering functions, no matter how sophisticated. Or it plots business computations like bar graphs and pie charts. It can spot a trend, prove a theory, compare data, generate engineering designs. It lets the time-share user get more use out of a

terminal because he can get more use out of the numbers. He instantly comprehends typewritten data in smooth, clear plotted form.

HP's versatile new Terminal for time-share systems plots points or lines. Each data point is defined by its X-Y coordinates and the 7200 is a vector plotter, plotting absolute coordinates from all inputs. The position of the plot is adjustable and any preprinted grid or blank paper can be used. No special training is required to operate the 7200.

Check out Hewlett-Packard's new

7200 Graphic Plotter. It's available through time-share services. Call and learn how simple it is to plot computer-resolved problems—points, curves, circles, lines, ellipses, contours, bar or pie-charts. You name it. Look into expanding your time-share capability. Any time-share service that hasn't heard about the 7200 should talk to us.

HEWLETT  PACKARD  
GRAPHIC RECORDERS



## Binary Calendar Free for Users

WALTHAM, Mass. - Dates of the year in binary code? Yes, on a calendar available free of charge to computer users from Spiras Systems Inc.

SPIRAS PROGRAMMER'S CALENDAR

DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
1970	1971	1972	1973	1974	1975	1976	1977
1978	1979	1980	1981	1982	1983	1984	1985
1986	1987	1988	1989	1990	1991	1992	1993
1994	1995	1996	1997	1998	1999	2000	2001

Calendar in Binary Code

Machine-tested programs such as Change-Maker Subroutine, Date Finder, and Slot Machine Simulator are featured each month on the spiral-bound 8-1/2 in. by 11 in. calendar.

Flow charts for each program are shown on the front of the corresponding monthly page; instructions and related information are detailed on the reverse side, according to the company.

The firm stated that quantities of the free calendar are limited, and that requests may be sent on company letterhead to Spiras Systems Inc., 332 Second Ave.

March 4, 1970

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# Time-Sharing Minicomputer Designed Around Software



Wang 3300 Basic

By Frank Piasta

CW Staff Writer

**TENNESSEE, Mass.**—The Wang 3300 Basic, a low-cost time-sharing computer system, was tailored during development to accommodate software requirements, according to Wang packages for the system were developed by PHI Computer Services, a subsidiary of Wang, by simulating the 3300 on an IBM 360/65. Some of the problems encountered were solved by the novel approach of changing the hardware design, the firm said.

As its name implies, the 3300 Basic uses the Basic time-sharing language as the prime means of communications. This

results in what Wang calls "the most easily operated minicomputer time-sharing system available."

The central processor, an eight-bit computer called the Wang 3300, features 1.6 μsec cycle memory. From a minimum of 12K words, the 3300 is expandable in 4K increments to a maximum of 65K words. A repertoire of 20 memory reference commands include decimal and binary arithmetic capabilities.

Also featured in the processing unit are a push-down stack addressing system that permits every core position to be used as an index register, priority, interrupt, or both character bus and direct memory

access I/O, according to Wang.

At the present time, peripheral units are limited to terminals, of which several are offered. The most economical unit is the teletypewriter terminal. A 15 char/sec I/O writer, a modified Selectric type writer with character buffer and Basic-compatible character set, is also available.

For secondary storage with the I/O writer, Wang developed a high-speed tape cassette drive capable of operating two magnetic tape cassettes. The Wang 1103A acoustic coupler may be used with the Wang 3315 Teletype terminal over standard telephone lines. A total of 16 terminals can be supported by one 3300 system.

Wang has indicated that a disk-storage device will be available for the 3300 in the near future. CW has learned that this will be a five-million byte system to be built by Digital Information Storage Corp. Wang is a part owner of this supplier. The disk units will probably be announced in about six months, according to Wang.

Other software available for the 3300 includes an assembler, and utility programs such as debugging aids; and printing and plotting routines.

A typical 3300 system, including a 12K processor, two teletypewriter terminals, and the Basic language, costs \$15,250.

First customer deliveries are scheduled for June 1970, and the system will then be available on a 120-day schedule, the company said.

Wang Laboratories Inc. are located at 836 North St.

## Portable Keyboard CRT Display Weighs 25 Pounds

By Drake Lundell

CW Staff Writer

**CAMBRIDGE, Mass.**—Logitron Inc. has introduced what is claimed to be the computer industry's first fully portable CRT terminal.

The Logitron/I, weighing approximately 25 pounds, is a 512-character display equipped with a retractable CRT, including a standard alphanumeric keyboard and an integral acoustic coupler. The unit can operate at either 10 or 30 char/sec, the firm said.

The unit, said to be directly interchangeable with a teletypewriter without reprogramming, operates in either a local mode or an on-line mode. In the local

mode the unit provides page transmission which allows local operation. In the on-line mode the unit transmits character by character, identical to a teletypewriter.

The Logitron/I, which can operate in either the full- or half-duplex mode, uses MOS read-only memory as a character generator. Deflection is handled by television-like components with a seven-line interleave, the firm said.

The acoustic coupler is a digital device, and all timing and frequency adjustments are handled digitally within the unit, the firm added. In addition, it uses a universal switching mode power supply that is said to be capable of handling both

AC and DC current sources.

Initially the Logitron/I will be available from more than 17 offices in 37 states, the firm said. All of the sales offices are equipped to handle service for the machines, Logitron added.

Other products planned by the firm include the Logitron 1600, which will be an 80 char/line, 20 line (1,600 character) desk-top CRT scheduled for introduction in June for a price of under \$3,000. The firm will also introduce the Logitron 512, a 32 char/line 16 line desk-top CRT terminal later this year. The price will be under \$2,000.

Logitron, Inc. is located at 197 Albany St.

## Universal Interface From EG&G Connects Peripheral Devices

**SALEM, Mass.**—A data interface, said by the maker to be capable of coupling any computer to any peripheral device, including one-of-a-kind "in-house" built units, is available from EG&G, Inc., Data Products Group.

Capable of servicing up to eight different kinds of peripherals, the EG&G 832 data interface features block transfer and priority interrupt capability for all devices, according to the maker. Different types of peripherals are controlled by up to eight individual device cards, each of which can service several devices of the same type.

For example, four or more CRT displays may be interfaced with the CPU by means of one device card, while the other seven cards service other classes of I/O devices, such as modems, rotating memories, or satellite computers.

A system of registers in the device cards is used to control synchronization, which results in the computer being interrupted

only when data to be transferred from the peripheral is already loaded into the registers.

The EG&G data interface offers parallel bi-directional control and data paths. Transfer time of 600 nsec reportedly allows use with the fastest computers. The device occupies one position on the computer's program control bus and one on the direct memory access channel.

The structure of the 832 data interface is said by EG&G to provide: parallel control bits and sense capability; parallel device sub-addressing for addressable devices; improved computer transfer efficiency through its block transfer capability; and several maskable multi-level interrupts from each peripheral.

Prices for the EG&G 832 data interface range from \$10,000 to \$15,000. The device is available on a 60- to 90-day delivery schedule.

The Data Products Group of EG&G, Inc. is located at 35 Congress St.



### IBM 360/85—CHICAGO

768 K  
8 2401 Mod 5 Tape Drives  
1 2314 Direct Access Storage Device  
2 High Speed Printers  
1 Card/Read/Punch  
1 Card Reader  
1 2250 Graphics Terminal  
2 2780 Terminals  
1 2701 Communications Control

Remote Terminals:  
IBM 2780, IBM 1130 & 360's  
OS: MVT; HASP

### UNIVAC 1108—CLEVELAND

131 K (38 Bit Words)  
4 9 Channel Tape Drives  
10 7 Channel Tape Drives  
2 432 Drums  
2 1732 Drums  
2 Fastscan II Drums  
3 1004 Terminals  
1 CalComp Plotter  
1 Soroban Tape Punch  
1 Cleve 4800 LPM Electrostatic Printer

Remote Terminals:  
Univac 1104, Univac 9200, IBM 1130  
EXEC IV; EXEC 2; EXEC 8

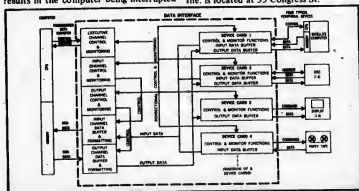
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Block Diagram of a Typical 832 Configuration



Univac 1106

## Memories, Tapes Added to Univac CPUs

PHILADELPHIA — Univac has announced an alternative main memory system for its 1106 system, a peripheral memory system for its 1100 series, and two magnetic tape subsystems for its 1100 and 400 series.

The Univac 1106 user can now use the new memory, Unitized Storage, or the previously available standard 1106 memory, the Multi-Modular Storage (MMS) memory.

Unitized Storage memory operates at the same cycle speed of 1.5  $\mu$ sec as MMS but precludes the use of the instruction overlap feature of the 1106 CP, according to Univac.

A user can change from Unitized Storage to Multi-Modular Storage without the need for modifying system software, Univac continues. Unitized Storage reportedly allows for smooth upward transition to an 1108 system.

Two Unitized Storage modules, each of 131,000 words, can be utilized with an 1106 system to provide a maximum storage capacity of 262,000 words. One module supports the Exec 8 operating system.

One module (131,000 words) of Unitized Storage sells for \$203,875 and rents for \$4,290/mo on a one-year basis. Deliveries are planned for the

fourth quarter of 1970.

### Peripheral Subsystem for 1100s

The peripheral subsystem for 1100 users, Unitized Channel Storage (UCS), reportedly is valuable in a multiprogramming environment where it may be necessary to switch rapidly from one program to another.

The static nature of UCS avoids the latency time lost in accessing information stored on a drum subsystem, according to Univac. The UCS subsystem can be shared between multiprocessors in a multiprocessor system.

Data stored in the subsystem can be transferred to and from the main memory at 2.6 million char/sec. UCS is available in increments of 262,000 words up to a maximum of four modules providing a total maximum capacity of 1,048,000 words per subsystem. Each subsystem requires a control unit.

### systems/ peripherals

Univac stated that the subsystem can be installed in existing systems without the need for new software and user interface equipment.

Delivery of UCS is planned for fourth quarter 1970. A 262,000 word Unitized Channel Storage subsystem will rent for \$5,630/mo on a one-year rental. Purchase price is \$270,240.

### Subsystems for 1100s, 400s

The Univac 12 and Univac 16 magnetic tape subsystems for Univac 1100 and 400 users are scheduled for delivery in the third quarter of 1970.

Each tape system reportedly offers twice the data transfer rates, increased storage capacity per reel and greater reliability than earlier Univac units.

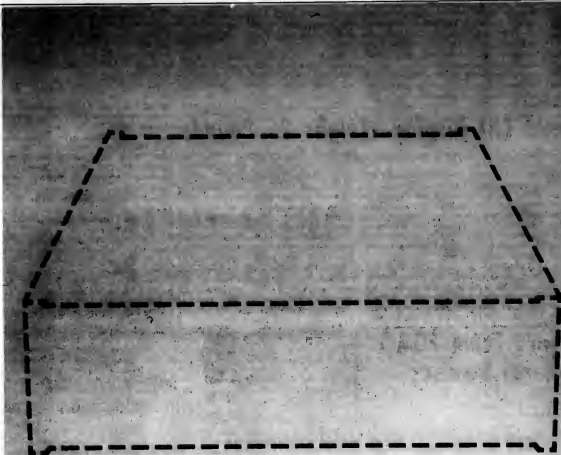
The Univac 12 unit, with a speed of 42.7 in./sec, is a low-cost tape handler and offers data rates up to 68,320 frames per second. A simultaneous operation, read/read, read/write within a bank, and write/write between banks can be provided with an additional control unit, Univac says.

The Univac 16 unit has a tape speed of 120 in./sec, and provides a transfer rate of 192,000 frames per second. A dual access feature provides simultaneous read/read, read/write and write/write operations and complete system redundancy by the addition of individual power supplies for each control unit and independent access paths to each Univac 16.

Features offered with associated control units reportedly at low a mixture of seven- and nine-track tape units using various industry standard tape formats.

A nine-track Univac 16 subsystem, consisting of four tape units and controller, will rent for approximately \$4,400/mo on a one-year agreement and will sell for about \$170,000.

A nine-track Univac 12 subsystem, consisting of one master tape unit, three slave units and controller, will rent for approximately \$2,500/mo on a one-year basis and will sell for about \$95,000.



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## Data Transmission Systems from Lenkurt



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systems/peripherals

## GE-100 Disk Subsystem Leases at \$625/Month

PHOENIX, Ariz. — A low-cost disk storage subsystem will be available in the fall for the GE-100 computer line.

Designated the DSS10, the subsystem is upward compatible in the GE-100 line and meets the basic requirements of mixed tape and disk systems, according to GE.

The DSS10 subsystem for use with the GE-115, GE-120 and GE-130 systems may contain up to four disk units. Each unit has two removable disks with two recording surfaces. Each disk unit has a capacity of 2.3 million bytes, or 3.07 million six-bit characters. Average access time is 87.5 msec.

Deliveries of the DSS10 are scheduled for September 1970, on a six-month basis.

The basic subsystem, including controller and one disk unit,

leases monthly for \$625 and sells for \$26,376. Monthly lease and sales prices for each additional disk unit are \$325 and \$13,728 respectively.

## Mag Tape Unit Speeds Up Input To COM Device

SAN DIEGO, Calif. — A magnetic tape unit available from Stromberg Datagraphix Inc., when integrated with a Datagraphix 4340 Microfilm recorder, allows the recorder to translate output from digital computers to alphanumeric data at 30,000 char/sec, and to display them on a company Characteron shaped beam tube.

This readable text, in page format, can be photographed on film at 7,000 line/min. An operator, the company claims, can turn out 30,000 pages of computer-generated information in an eight-hour shift using this equipment.

Called the Model FS12, the magnetic tape unit reportedly enables the 4340 recorder to accept nine-channel 1600 bit/in. phase-encoded magnetic tape input in addition to nine-channel 800 bit/in. and seven-channel 800 bit/in. and 556 bit/in. NRZI-encoded tape.

The magnetic tape unit has a tape transport speed of 37.5 in./sec in all modes of operation, according to the company. Transfer rates are 20.8KC at \$56 bit/in., 30KC at 800 bit/in. and 60KC at 1600 bit/in.

The FS12 will be available to customers in the third quarter of 1970. The unit will sell for \$18,500, with a monthly maintenance charge of \$75.

A monthly lease plan, including maintenance, will be offered on the following schedule: first year, \$535; second year, \$490; third year, \$45; fourth year, \$410; and fifth year, \$375. A 60-month lease is also available at the rate of \$425/mo.

The address of Stromberg Datagraphix Inc. is P.O. Box 2449.

## High-Speed Fixed-Head Drum Memory Increases Users of PDP-10 T/S System

MAYNARD, Mass. — A high-speed fixed-head drum memory, which can "significantly increase" the number of simultaneous users in a typical PDP-10 time-sharing configuration, has been developed by Digital Equipment Corp.

The RM10B drum features a storage capacity of 345,600 36-bit words, an access time of 8.5 msec (at 3,600 rpm) and a transfer rate of over 240,000 word/sec. Four RM10B units

can be supported by a single control unit.

According to Robert Savell, PDP-10 product line manager, the access time of the new drum is twice as fast as that of the swapping disk now in use with the PDP-10 and the transfer rate is about three times as fast.

The new unit works to three-drum, swapping disk, and disk packs — the number of high-speed rotating memory options a user can specify for a PDP-10

system depending upon his storage, access time and transfer rate requirements.

Priced at \$50,000, the RM10B operates under the principle of a flyball governor as a fail-safe system against costly head crashes, DEC says. Under this principle, the slightly tapered drum automatically retracts from the 540 heads in the unit whenever rotation drops below 65% of the device's operation speed.

# Computer Leasing (BIG SAVINGS) is back

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Dallas: J.B. Allison, Dallas Federal Savings Bldg. 75201 (214) 741-3631



GATX



GATX-ARMCO-BOTHE



COMPUTERWORLD

## societies

## Canadian Society Plans Annual Show in Montreal

TORONTO — The Canadian Information Processing Society (CIPS) has extended an invitation to other professional data processing societies to participate in the first annual Canadian Computer Show, scheduled for Montreal's Place Bonaventure, Sept. 14-16, 1970.

Show management is offering exhibit space to these groups for information displays promoting association membership and services.

An executive committee representing Cips has been appointed to work with the management in determining plans and policies for the exhibition. Members of this committee will also form the nucleus of the show's advisory council, responsible for staging a series of educational seminars in conjunction with the show.

Now being formed, the advisory council will include representatives of industry associations as well as Cips, the show's sponsor, Colin Campbell, manager, data processing services, Touche Ross & Co., Montreal, is

chairman of the executive committee.

According to show manager Derek Tide, "More than half the available exhibit space has already been sold. By showtime, we expect 150 companies will be there showing the latest developments in computer and data processing equipment, methods, and techniques."

## Bona Proceedings Released in Book Or Cassette Form

NEW YORK — The proceedings of the Business Equipment Manufacturers Association's 1969 management conference are now available in either book or cassette form, according to the publishers, Business Press International.

The materials, dealing primarily with data processing and office machines technologies, are available individually or as a 16-tape album.

Topics covered include: Information Bottlenecks — How to Avoid Them with Total Systems Planning; Simplified Computer Inputs — The Key to Low-Cost Reprographic Charge Systems; Output Equipment Considerations for Effective Information Dissemination and Display; The New Marriage of Microfilm and the Computer; Service Bureaus — Their Place in the Small Business Environment; New Capabilities of Medium-Scale Data Processing Systems; The Banking Application of Time-Sharing Systems; Advanced Peripheral Devices and Memory Systems; New Software Packages for Business and Industry; and Maintaining Privacy and Security in the EDP Processing of Management Information.

Single cassettes have been priced at \$7.95. The album price is \$120. The Business Press is located at 288 Park Ave., Elmhurst, Ill.

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## CDC Users Claim Discrimination

NEWTONVILLE, Mass. — In a letter to its members, Focus International, a Control Data Corp. user group, has called for a reversal of CDC's policy of separate software prices.

The purpose of the letter was to evoke comment from the group of users, a spokesman for Focus International said.

### Deliberate Discrimination

Declaring that the company deliberately discriminates against its U.S. domestic customers, the letter noted that Control Data's recently signed 1970 Authorized Federal Supply Schedule (GSA Schedule) does not recognize separate pricing of CDC standard software.

Thus, the letter stated, CDC favors the installations of the

U.S. government and foreign governments over those of its domestic users.

A spokesman for the GSA could give no indication of when the government would be willing to accept the separate pricing policy for CDC's software.

The separate vending of operating systems and associated standard software by the company represents operation in a monopolistic fashion, the letter said, through which the domestic commercial user is left with a sole source establishing prices and conditions in the marketplace.

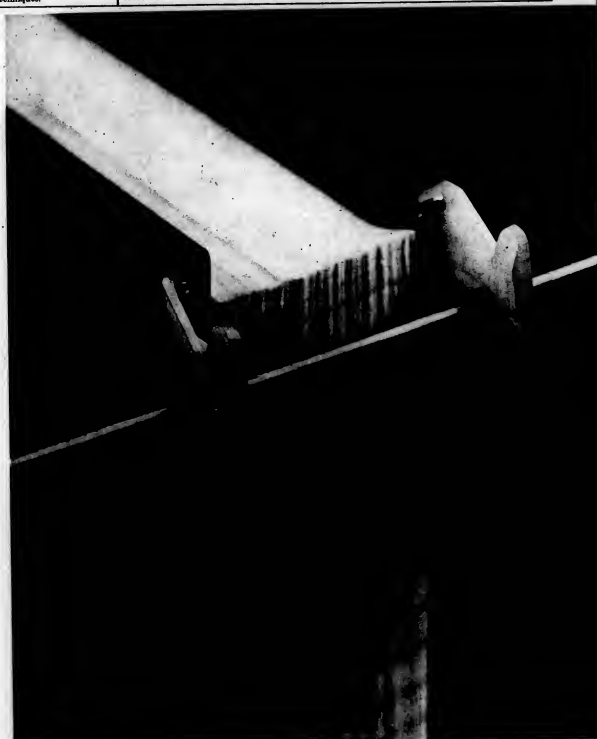
### The Tie That Binds

Because such software is fundamentally linked to the characteristics of the hardware, the two

form a single entity that must be sold as a single item. To this end, a reversal of Control Data's policy of separate software pricing is necessary, the letter continued.

The executive group of Focus International did not resist unbundling as a "concept when it was first proposed," the Focus Spokesman said. Software services can, in many circumstances, be unbundled, but there are some charges that should be merged, he continued. These are the ones that are so tightly coupled with the hardware that there is no free market, he said.

Stating that CDC was cognizant of the letter's distribution, the spokesman said it was hoped that the action would lead to meaningful discussion with the company.





## Control Data, Bishop College Undertake Cooperative Approach to EDP Education

DALLAS—Until recently, college students wishing a background in data processing were usually out of luck unless their school supported its own data processing equipment and instructional staff.

However, Bishop College and the Control Data Institute of Dallas have teamed up to offer a program that should prove advantageous to the students and to both institutions.

Approved by the board of directors and planned for imple-

mentation during the spring semester, the program will enable Bishop students to enroll in two-year courses leading to associate degrees in computer programming technology and computer engineering technology.

Under the new plan, students desiring a data processing education would be able to acquire it, but without sacrificing additional money, a general college background, or the rewards implied by a college degree.

Bishop's director of admissions, Weber Porter, said, "[The students] will matriculate at Bishop to get the basic foundation courses to certify them for the associate degree.... This means that we will supply the

academic area and they will supply the technical aspect."

The students will alternate semesters between Bishop and the Control Data Institute, but without paying additional tuition.

If, having completed the two-year course, Porter said, the student opts to continue in a four-year program, "It would be just a matter of him coming back and picking up from his two years and going on."

Porter said the cooperative concept resulted from discussions between administrators at both schools, who had noticed that it was not uncommon for students to drop out of the college and later to enroll in the data processing school.



COMPUTERWORLD

## education

### Language Training Lauded In Experimental Project

By Kate Rachstein  
CW Education Editor

EL SEGUNDO, Calif. — The results of an experiment in data processing education appear to indicate that mastery of a programming language may measurably improve a student's self image and decrease school dropout rates.

The findings are those of B.J. Hoffman, a Xerox Data Systems

behavioral scientist and director of a computer science workshop for some 300 students from the Compton Union High School District.

#### 'A More Dimensional View'

Hoffman theorizes that the knowledge of a second language, any second language, will broaden a student's outlook. "We have long been aware," he said, "that

when people learn a second or third language, their visual and aural senses open toward a more dimensional view of life. By teaching students computer programming and providing them with a special kind of second language, we believe that we can help reduce the dropout rate...."

Hoffman readily admits a bias in favor of interest among his student volunteers. He asserts, however, that among those participating in the program, Compton's staggering 50% dropout rate was cut by 75%.

The researcher feels, however, that this change is "only incidental" in terms of the other results. Through the use of a "very good and highly validated" semantic differential test, Hoffman notes, "we were able to delineate certain self-evaluations which changed perceptibly after 20 weeks."

"The sampling which the administrators have done on the students who have taken our computer science language say that not only have they improved mathematics and in spelling, but that their English composition is also improved."

#### Projecting the Image

Student participants are apparently projecting quite a different picture of themselves to prospective employers. When five participants interviewed for positions

(Continued on Page 34)

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## Coburn Branch Adds New Films

WHITE PLAINS, N.Y. — Two new tutorial films and a packaged course for in-house programmer education have been released by Computer Methods Corp., a subsidiary of the Coburn Corp.

The 16mm films, entitled "Direct Access Storage" and "Program Organization," run 17 and 19 minutes respectively and sell for \$220 each. They may not be rented. The course is entitled "Direct Access: Devices and Techniques."

According to a company spokesman, the films are introductory material for "programmer trainees and experienced programmers not exposed to direct-access devices."

Computer Methods is located at 480 Mamaroneck Ave.

## XDS High School Experiment Successful

(Continued from Page 33)  
at a local bank, Hoffman stated, the students' observations about their preparation included their elementary background in computer science, their ability to think logically, and the feeling that they could help solve some of the bank's problems.

According to Hoffman, one member of the bank's personnel team called the students "the most unusual people we've ever employed."

### A Great Equalizer

Hoffman feels that the program's unusual degree of success may lie in the lack of a cultural bias in programming languages. "When the unilaterally prepared American... learns a second language and a third and a fourth," he said, "[the value isn't] additive, it's exponential. When I began to extrapolate that kind of feeling to the computer science language, I found that... a computer science language is even more important than French or Spanish, because everyone is the same in front of a computer. There," he said, "the black man, and the Spanish, and the white, and the green, and the purple are all the same."

As a next step, Hoffman plans to get the project out of the

laboratory and into the appropriate learning environment for the students. The school, he happily reports, is now installing its own terminals to continue a variation of the program and to reinforce the learning that has already taken place.

"So now we're moving into the area where it rightly belongs—namely, training the teachers... and training the students in their own environment so that the learning experience is not something that is atypical, but typical," Hoffman explained.

The original 40 hours of Fortran teaching that went on for the teachers only has now been condensed through a tape recording device on a cassette player. Thus the project will become a self-paced learning experience for the students, also equipped with cassettes and players.

### Where Do We Go From Here?

The ramifications of the project could be widespread. Compton will have an introduction to programming course next year, and XDS says that schools all over the country have expressed interest. Four Los Angeles schools will be duplicating the effort next year.

When data from further application learning environment is analyzed, Hoffman says he hopes to be able to say, "We've cracked the secondary education problem."

Began in February, 1969, the program has included high school sophomores, juniors, and seniors. When it is terminated this May, the 20-week workshop will have been presented four times to groups of 75 students. The students paid \$5 each to speed Saturday mornings with the project, with XDS absorbing the remainder of the cost. A local service club provided scholarships for students unable to afford the fee.



1971 IFAC/IEEE THIRD INTERNATIONAL CONFERENCE ON DIGITAL COMPUTER APPLICATIONS TO PROCESS CONTROL, June 2-5, 1971, Helsinki, Finland.

The conference is organized by the International Federation of Automatic Control (IFAC) and the International Committee on Applications and Computers by the International Federation for Information Processing (IFIP).

Papers should be based on existing applications of computer control brought into operation before the time of the conference. The organizers will place special value on papers describing methodological aspects, application of control theory to practical processes, on-line optimization, or the like.

Control aspects in the following fields are invited to offer papers: chemical industries; oil refineries; pulp and paper; boiler and power systems; minerals and metallurgy (iron and steel); air refining, metallurgical processes, rolling and connected processes; and other processes and systems.

Offers of papers together with a preliminary abstract in English (20 to 30 lines) should reach the Finnish Organizing Committee not later than March 15, 1970. Correspondence should be addressed to 3rd IFAC/IFIP Conference, Box 10130, Helsinki, Finland.

A "Call for Sessions" has been issued by the IFAC/IEEE ELECTRONIC SHOW AND CONVENTION (ES&C), Aug. 25-28, 1970 in Los Angeles.

Proposals are invited suggesting a specific session topic, and scope it would cover, and proposed speakers for each of four papers within the session.

Following are some of the subject areas of particular interest to the committee, although proposals on other subjects are invited: Computers in the small computer, terminal in a large computer system, computer design and maintenance, and trends in peripherals: EOP and Software—computer systems, time-sharing considerations, and programming approaches for business and engineering. Communications—applications of new techniques to data transmission, spectrum considerations, wide-band pipe and computer data transfer. Medical Electronics—hospital electronics, biological sensors, and needs; Geology and Oceanology—electronic application to ecology, pollution, environmental science, and oceanography. Management—new ventures, better tools for engineering management, government, government R&O, and new product planning.

The deadline for proposals, in letter form, is March 14, 1970. Address responses to E.W. Papenfuhr, Technical Program Chairman, Wescon, 3600 Wilshire Blvd., Los Angeles 90005.

## AEDS Hosts EDP Shop March 13

ST. LOUIS, Mo.—On March 13, the Association of Educational Data Systems (Aeds) and the University of Missouri, Rolla, will host a workshop for educators on the development and evaluation of educational programs in computer science for junior colleges, technical schools, colleges, and high schools.

The workshop is recommended for educators and administrators who are developing and planning courses and educational programs in computer science and data processing.

A staff of educators will discuss course content, curricula, and other aspects of educational data processing programs.

The registration fee is \$40. A March 5 deadline has been set for registration, but additional applications will be accepted on a space-available basis.

For additional information contact Walter L. Ries, Extension Division, 501 W. 11th St., Rolla, Missouri 65401.

## Computer Impact Lectures Slated

PITTSBURGH—Three presentations remain in a Carnegie-Mellon University series of lectures on the social implications of computers.

Sponsored by the school's computer department, the lectures are:

"Are Computers Useful in American Politics?" March 17, by Yale psychologist Robert Abelson.

"Implications of Computer Simulations for Research on International Affairs," April 1, by Harriet Gutzow, political scientist, Northwestern University; and

"Toward 2001—the Role of the Computer," April 28, Herman Kahn, director, Hudson Institute.



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# ICL, CDSIL Enter European Time-Sharing Business

By James H. Bonnett

CW European Correspondent

LONDON — Giving an impression to many people of being afraid of being left off the time-sharing bandwagon, International Computers Ltd. (ICL) has agreed with Computer Data International Ltd. (CDSIL) to enter the time-sharing business in Europe.

ICL has taken 25% of the equity, for a price of \$1.25 million, of CDSIL which is the newly formed subsidiary of Computer Data Systems Inc., a U.S. consulting organization.

CDSIL in the U.S. is only about 18 months old and has made financial circles comment on the

wisdom of ICL investing, to such an extent, in the venture.

On the credit side of the exercise is that the time-sharing service will be using ICL 1904A systems networked throughout Europe and therefore will be introducing some of ICL's newest and highly regarded equipment to many users over the next two years or so.

Initially seven large time-sharing centers are planned for seven major European cities extending from Sweden to Italy, each with more than \$1.25 million worth of ICL equipment.

The extent of the investment in the project may be as high as \$25 million in the next two

years and the Bank of America and the Bank of England have given permission for the deal to go through.

Geneva is destined to be the site of the first center in May, followed closely by others in Stuttgart, Paris, and Stockholm. Later next year centers are planned for Amsterdam and Milan. There are also plans for a UK center in London.

At least 35 terminals will be connected to each center and these will allow, besides time-sharing, batch and remote batch processing to all types of users including both scientific and commercial oriented customers. ICL has also given CDSIL a contract to develop a time-sharing

and communications system package for the 1900 series of computers.

President of CDSIL is Joseph Easley who for six years, prior to his setting up the U.S. operation, was with Univac and working on the EBC operating system for the 1108. Since the formation of CDSIL in America, Easley and his associates have been looking at the equipment both Europe and the U.S. had to offer for the company's project. They decided the ICL 1904A had superior communications handling capability at a lower cost when compared to any other equipment on the market.

ICL's software, according to Easley, is good, but the company has neglected the time-sharing and communications markets. This is one of the major points on which CDSIL's parent company's experience will be an advantage. A CDSIL subsidiary has already an international service in Geneva with an ICL 1904 connected over land lines to MDS terminals in Paris and Stuttgart.

In Paris too, CDSIL has taken an 80% interest in Ascomp which will now be working closely with

ICL in France. The whole venture means that back-up service for ICL equipment will be more widespread throughout Europe and this, coupled with the exposure of European data processing people to ICL machines, should strengthen its sales position with comparatively little extra effort.

The services side of ICL is rapidly being expanded at the moment. Besides this latest operation there has also been a merger of its bureau business, ICIL, with the customer computer services of Barclays Bank.

This bank with its 3,300 branches in the UK plus its overseas operations through Barclays Bank DCO, should provide what is now the UK's largest bureau organization with a flow of new business.

ICL is definitely thinking European. On the bureau side the company is moving into continental Europe from a strong UK business which is estimated to be growing at a rate of 30% per year and reached \$7.68 million in 1969, and to this must be added Barclays Bank's business thought to be in excess of \$2.5 million per year.

## College Apparel Seminar Urges Textiles To Be Wary of 'Hardware Happiness'

PHILADELPHIA — Textile and apparel manufacturing executives were urged to beware of "hardware happiness" in remarks before a seminar group at The Philadelphia College of Textiles here.

The seminar, entitled "Apparel Data Processing — How Do You Know When You Need It?" was attended by needle trades representatives from the East and Midwest, and was the first of its kind arranged for this segment of industry. It was sponsored by the college in cooperation with the Honeywell EDP division.

## Rolls to Sell Commercial Services

LONDON — IBM's largest customer in the United Kingdom, the aero-industry giant Rolls-Royce, plans to enter the commercial computing business this year in conjunction with an unnamed French company.

Rolls-Royce is to provide a European service initially making use of its current IBM installations valued at about \$24 million.

If successful, a separate center will be established at the East Midlands Airport, Castle Donington, Lincolnshire.

The new center is expected to install either twin IBM 360/65s

Robert B. Nadel, manager, Systems and Data Processing, Hertz, Herson & Co., C.P.A.s, warned the group to guard against buying computer equipment "only because your neighbor is doing it. That's what I mean by 'hardware happiness'."

Nadel said, "There seems to be a dangerous trend in the apparel and textile trades to purchase equipment without exploring all options."

Nadel told the group that the three major areas which would suggest that a firm was ready for some type of computer equipment were: when management

or the first of the as yet unannounced new range from IBM. This is reported to be equivalent in power but offers a substantial cost saving.

The decision to enter into commercial service follows a year of closely guarded negotiations which have included discussions with the UK Ministry of Technology, which is understood to approve of the deal but to have put no money into it.

"Systems International" has available a team of several hundred programmers and systems analysts.

begins to get outdated, unusable information from its present processing system; when the cost of processing information seems to become exorbitant; or when errors in information are excessive.

## Buyers' Market to Continue in 1970's, Despite Rise in Programming Demand

LOS ANGELES — Despite a rapidly rising demand for contract programming, the buyer's market that dominated in the late 1960s will continue into the 1970s. This finding, based on a Diebold research program study, was presented before a recent session of corporate executives.

Although the demand for software in general and contract programming in particular is estimated to exceed the overall rate of growth for computer hardware, a number of existing software houses are not going to survive. The study indicates that users will have the opportunity to drive hard bargains.

The Diebold research program projects that computer manufacturers will probably follow their unbundling decisions with a significant entry into the contract programming market.

Stimulating the demand for contract programming will be the appearance of users who so far have ignored the service. They will be attracted to the large, prestigious vendors and then to the smaller, specialized firms offering greater flexibility, faster response time, and unique skills and talents.

A more complex software industry will emerge as a result of broadening product lines, mergers, and the entry of the computer manufacturers into this competitive market.

The development of an enlarged software industry, increased contract enforceability, and the greater overall demand for programming will more than offset the negative influence of software packages, bringing many new users into the market

for contract programming.

One of the guidelines the study gives the user preparing to purchase contract programming is, "first decide whether to buy a software package or develop his own solutions or hire the services of a contract programming firm." The Diebold research program considers this "make or buy" decision crucial as "unbundling" threatens to increase EPD budgets substantially.

The Diebold study explains that contract programming projects may seem similar to an in-house assignment, but the problems are actually more acute because the vendor expects to turn a profit on the job when he completes it. The user must more carefully define issues that are understood by in-house personnel.

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## Orders and Installations

Valued at \$5.8 million, three Univac 418-III real-time systems will be installed by Taiko Bank of Taiko, Japan. The computers will be used in an on-line mode for processing current and time deposit accounts, savings accounts, domestic exchange and remittance.

Legion of San Pedro, Calif., has delivered a thirty-third Logic input/output network (Li/on) to Realtronics of Denver, Col. Realtronics will initially use the Li/on in its Aspen, Col. IBM 1130 installation where it will be used in conjunction with remotely located terminals to assist skiers in finding lodging in the Aspen-Snowmass area.

The State of Illinois has ordered a GE-Pac 420 to be used for traffic surveillance in the Chicago area.

Applied Dynamics of Ann Arbor, Mich., has received an order from Lausanne University, Lausanne, Switzerland, for a 100-volt reference analog/hybrid computer.

Several companies have recently ordered or installed Univac 9000 series computers. Bryan Utilities, Bryan, Texas, ordered a Univac 9200 II which will make current credit status and consumption information, as well as account historical information, available upon request.

Both the University of Arizona

and the Berlin Brigade Headquarters of the U.S. Army installed a Univac 9300 system. The university's computer will be used for student registration and other business applications, while the U.S. Army's computer will be applied to military payroll personnel accounting, stock accounting, and inventory control.

Four manufacturing firms have recently installed Honeywell systems for a variety of applications. Air Balance Inc., Chicago, Ill., has installed a Model 110 magnetic tape computer system for accounts receivable, invoicing, order entry, inventory control, and for processing order fabrication instruction sheets for

five plants in the U.S. Antler Ltd., Bury, Lancs., England, will also use its Model 110 for inventory control, invoicing and statistical work. Falcon, Products Inc., St. Louis, Mo., and Walworth Co. Alloy Division, Baintree, Mass., have found similar uses for their Model 110s.

Keeping enough special paper stock on hand to print Britain's ten, five, one-pound and 10-shilling bank notes is one of the jobs to be assigned to the two NCR Series 500 computer systems at the Bank of England Printing Works. The two computers will also process payrolls and maintain personnel records.

Four member firms of the Hans Liebherr Group have in-

stalled five NCR Series 500 computers for a variety of applications including stock control, financial accounting, and payroll processing. The systems are in operation at Liebherr Building Machinery Ltd. at Hatfield, England, Liebherr Ltd. at Killarney, Ireland, two systems in Kirchdorf, West Germany, and the fifth in Ehingen, West Germany.

Edwards & Hanly, New York and American Stock Exchange member firm has installed an IBM 360/40 which will enable the processing of more trades than the firm's earlier generation equipment. Moreover, these trades will now include a number of highly complex transactions that up to now could be processed only by hand.

Optical Scanning Corp., Newtown, Pa., has rented six Opscan 70 systems and one Opscan 100 DM system to the Social Security Administration of the Department of Health, Education, and Welfare. The total value of these optical mark reading systems is in excess of \$250,000.

In a major move to expand operations, Interactive Data Corp. installed a second IBM 360/67 at its headquarters in Waltham, Mass. The installation of a third 360/67 will begin later in the year, and a fourth, fifth, and sixth are on order.

Hancock Bank & Trust Co. of Quincy, Mass., installed a Burroughs B500 valued at \$350,000. The B500, used for standard banking operations, will facilitate a wider range of customer services.

McDonnell Douglas Corp. ordered a Systems 86 computer from Systems Engineering Laboratories, Inc., Santa Monica, Calif. The new system will be an integral part of the Upstage flight experiment conducted by McDonnell Douglas Astronautics Co., a Western Division for the Army's Advance Ballistic Missile Defense Agency.

The first DSI microsearch system has been installed at the headquarters of The Association of Student Governments, Washington, D.C. The information retrieval system, which combines microfilm technology and computer time-sharing, will be used primarily for the retrieval of student-related information in the fields of educational innovation, credit checking, personnel location, and other record keeping.

Karr-McGee Corp., Oklahoma City, has placed an order for the GE-435 information system that will be used for data reduction and analysis in mineral exploration, as well as a variety of business information applications.

SYS Associates, Inc., Fort Lee, N.J., has delivered a third SYS 3360 tape converter to McCrory-McLellan-Green Stores, York, Pa. The system consists of two tape transports, one for Univac III tapes and the other for IBM 360 tapes, plus a control unit for each transport and the converter hardware.

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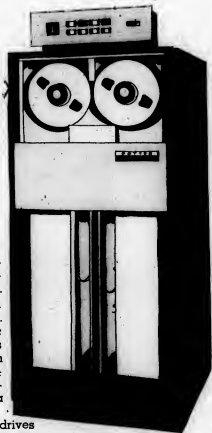
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## Acquisitions

Sient Computer Corp., Houston, a company specializing in data processing and other computer applications, has signed an agreement in principle for the acquisition of Creative Developers, Inc. for an undisclosed amount of Sient stock. Creative Developers, with headquarters in Baton Rouge, La., is involved in the distribution of a process for the erection of reinforced concrete buildings.

Travcom, Inc., wholly owned computer services subsidiary of The Travelers Corp., Hartford, Conn., has purchased the assets of Computer Power, Inc. of Philadelphia. Computer Power is engaged in the development and implementation of computer-based accounting and record keeping services for small- and medium-size businesses.

Brandon Applied Systems, Inc., New York, has reached an agreement in principle for its European subsidiary, Business Intelligence Services Ltd., to acquire Industrial and Commercial Techniques Ltd. Terms of the acquisition were not disclosed. Brandon Applied Systems is an international management and technical consulting firm specializing in data processing and information sciences, EDP education and training, programming and proprietary software, and publishing and printing. Industrial and Commercial Techniques is an international business education organization that conducts training courses, publishes reference manuals, and markets efficiency devices.

Computer Services Corp., Southfield, Mich., has acquired Chicago Data Processing Center, Inc. Computer Services is a data processing firm that provides data processing, key punching, and software services.

Programming Sciences Corp. of New York, a software development and systems programming firm, has agreed to acquire Administrative Systems, Inc., Mineola, N.Y., a computer services firm, in exchange for common stock and warrants. The proposed acquisition is for about 148,000 PSC common shares in exchange for the outstanding shares of ASI. Additional PSC common would be reserved for issue and conversion of ASI com-

mon stock. Another term of the acquisition calls for PSC to deliver one common stock purchase warrant for each two PSC common shares exchanged for ASI common. The two-year warrants would be exercisable at varying prices after the closing of the acquisition.

University Computing Co., Dallas, a computer utility services firm, has agreed in principle to purchase the assets and business of the Systems and Services Division of Micromation Technology Corp., Chicago, for a total consideration of \$750,000. Systems and Services operates three COM service centers in Chicago, New York, and Arlington, Va.

Computer Sharing, Inc., Bal-

timore, Md., a subsidiary of Scientific Resources Corp., and Data Network Corp., New York, have reached an agreement in principle for a merger of the two corporations, each of which is engaged in providing computer time-sharing facilities and services. It is presently contemplated that each share of common stock of Computer Sharing would become one share of common stock of the merged corporation, and each share of common stock of Data Network would become about 1.5 shares of common stock of the merged corporation.

Wellington Computer Systems Inc., New York, computer consultants, has acquired 100% of

the stock of Telemax Corp., an automated reservation system serving the travel industry, from Riker-Maxson Corp. Telemax will be headquartered in New York while the Telemax Computer Center will continue to be located in Fairfield, N.J. Wellington has designed and installed complex communications systems, developed special purpose computer languages, and conducted client studies in order to determine system requirements, manpower needs, hardware evaluation, throughput requirements and many other factors. In the software development area, Wellington has designed and programmed a variety of computer systems it markets and supports as complete packages within par-

ticular industries, such as banking and manufacturing.

Computer Image Corp., Denver, Colo., a firm engaged in computer animation, has acquired Les Weisbrich and Associates, Inc. of Beverly Hills, Calif., a graphics company. The acquisition was made by an exchange of Computer Image stock for all the outstanding shares of Weisbrich stock.

United Data Center, Inc., a national network of electronic data processing centers, has sold Computech, Inc., its New York data center, to International Systems Associates, Ltd., also of New York, for a combination of cash and common stock.

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## Contracts

Swett & Crawford, Hargor Insurance, Buffalo Insurance Co., and Western Mortgage Corp., have contracted with Union-America Computer Corp. to operate their combined data processing resources under a facilities management contract.

Amper Corp., Culver City, Calif., has received a \$300,000 contract from Varian Data Machines, also in Calif., to supply core memory stacks for Varian 6201 computers. Amper Corp. will also supply a Model RM-50 extended core memory system to the City and County of San Francisco for use on an IBM 360/50 to speed processing of police, hospital, and social service records. The contract, exceeding \$400,000, calls for delivery of the Amper plug-compatible memory. The extended core memory will be part of an expanded city-and-county-wide teleprocessing network.

The Federal Aviation Administration (FAA) has awarded a \$210,000 contract to Informa-

tion Displays, Inc., of Mt. Kisco, N.Y., for equipment and services in connection with a nine-month evaluation of an oceanic air traffic control graphic display. The FAA will evaluate the display of aircraft position information as reported by means of automatic digital data link to determine if such a display is adequate for the control of oceanic air traffic.

The FAA awarded a \$216,321 contract to the Raytheon Co. of Waltham, Mass., to test equipment required in connection with the automation of the air traffic control system. The contract calls for 62 test stations or consoles designed to house specialized test equipment for the computer display channel and computer updating equipment, two key elements in the air traffic control centers.

Saint Barnabas Medical Center of Livingston, N.J., has entered into a long-term facilities management agreement with Gamut Systems, Inc., to manage and operate its computer facilities.

## Tenet Inc. Moves to New Headquarters

SUNNYVALE, Calif. - Tenet, Inc., San Francisco Bay Area builders of medium-scale time-sharing computers, has moved its headquarters and manufacturing facilities to a new plant at 927 Thompson Place here.

According to a company spokesman, the move will add another 30,000 sq ft to the present 15,000.

Initially the firm is manufacturing a time-sharing computer, plus appropriate software, designed to be used by engineers and scientists for technical problem solving. Intended for in-house installation, the computer will handle in excess of 30 terminals simultaneously. A typical installation would give the user 50 million bytes of secondary storage, 128,000 bytes of primary storage, and lease for less than \$10,000 per month.

### Other Expansions

The Systems Division of Milgo Electronic Corp. has opened a western regional office in New

port Beach, Calif. The new office, located at 4341 Birch St., will serve as the headquarters

### Expansions

for the marketing and customer support operations of Milgo's Systems Division for the West Coast. The division designs and manufactures data handling equipment and systems, primarily for government use.

Interdata of Oceansport, N.J., has opened a sales office at 300 N. Central Expressway in Richardson, Texas. The new office will serve the Colorado, New Mexico, Oklahoma, and northern Texas areas. In addition to eight regional sales offices, an international subsidiary of Interdata was recently opened in Great Britain to serve the growing European minicomputer market.

Computer Machinery Corp. of Los Angeles has opened a new

sales and service office in Dallas. The company manufactures the Key-Processing System, a computer-controlled keyboard input system.

Data Computing, Inc. has expanded its headquarters at 2219 W. Shangri La Road, Phoenix, Ariz., to more than triple its original floor space. Additional construction will increase total footage from 2,500 to 7,000 sq ft. Data Computing manufactures computer terminal equipment with special emphasis given to time-share users.

Peripheral Equipment Corp., located at 9600 Ironton Ave., Chatsworth, Calif., has recently occupied the first 36,000-sq-ft segment of its projected 72,000-sq-ft facility.

Computer Communications, Inc., Inglewood, Calif., has opened a Pacific northwest area office in San Francisco. The company's product line includes communications terminals, multiplexers, computer interfaces, and related equipment.

# Computerworld 1970

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## Time-Sharing and Service Bureaus

the 3rd in a series of Special Industry Reports  
... appearing in the March 25th issue.  
Advertising forms close Friday, March 6th (5 P.M. E.S.T.)

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### Time-Sharing's Advantages - in terms of:

- Usefulness
- Cost
- User Experience

### And Problems -

- Data Security
- Communications
- Up time vs. Down time

### Future trends -

- Technological Improvements - new uses - and their impact

### Costs - how much do you get for your money

### Applications -

- Education
- Scientific Uses
- Financial Management
- Corporate Planning
- Publication text editing and printing.

### The Service Bureau market will be examined in terms of:

- Its increasing specialization
- Values for cost
- Practicalities of jobbing out vs. doing it yourself.

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1111 Hearst Bldg.  
San Francisco, Calif. 94103  
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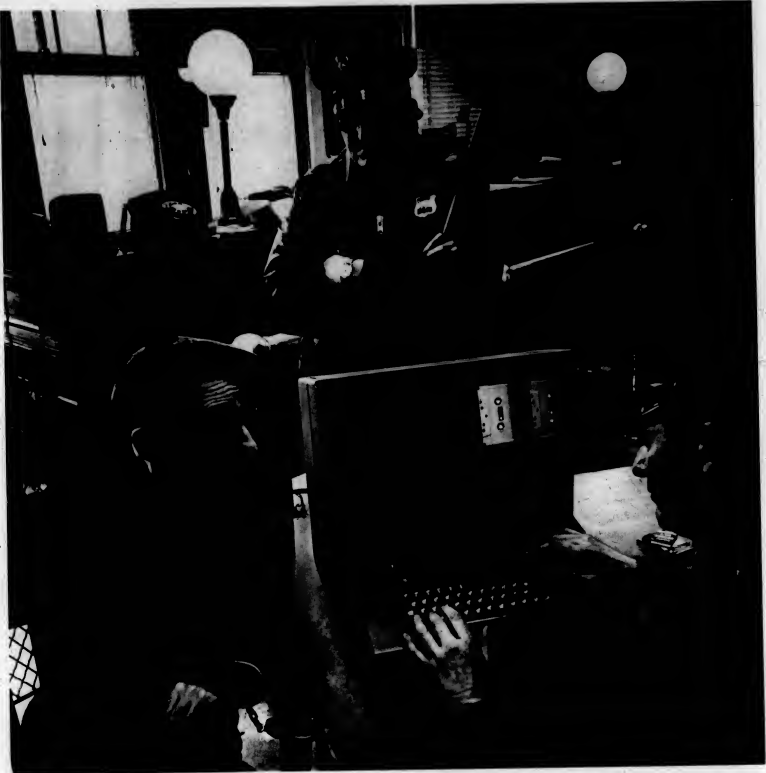
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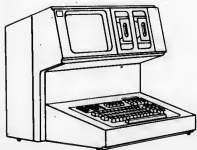
### \*Future Computerworld special reports -

May ... Communications (May 27th issue ... Adv close May 5)  
June ... D.P. Accessories (June 24th issue ... Adv close June 5)  
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## IDC Promotes Two Corporate Executives

NEWTON, Mass. — International Data Corp. has promoted two corporate executives. IDC is a data gathering, analysis, and publishing company in the computer industry.

Maxwell J. Evelevh Jr. has been named vice-president for corporate development and John P. Breyer has been named vice-president for professional services.

Evelevh had been vice-president-marketing and Breyer, vice-president-research.

Evelevh will now be responsible for planning the growth of IDC into new markets through creation of new programs and services and through the acquisition of established business enterprises.

His duties will include investigation of new products and services which might be undertaken by IDC, investigation of possible acquisitions or joint ventures for IDC or its subsidiaries, preparation of an inventory and plans to develop IDC's corporate capabilities, including executive skills, and surveillance of IDC's future markets.

Evelevh was national account manager for IBM for six years and held sales positions with Continental Computer Associates, Inc. and with the Data Systems Division of Sanders Associates before joining IDC in 1967.

Breyer will be responsible for developing and marketing IDC's professional services based on the analysis of a computerized data file on 70,000 computer and punched-card installations in the U.S. and overseas.

His duties include supervision of the development, execution, and marketing of IDC's professional services. These services are IDC's market information data files on the data processing field; custom, semicustom and multi-client studies on the products and markets of the computer industry, and subscription services such as the EDF industry research program and the corpo-

rate planners research program. Breyer joined IDC in 1967 after five years as a senior market analyst for Honeywell's Electronic Data Processing Division.

**Ray Ball VP-Marketing For Micro Systems Inc.**

SANTA ANA, Calif. — Ray Ball has been appointed vice-

### Executive Corner

president of marketing of Micro Systems Inc., a minicomputer manufacturer.

During the past seven years, Ball held responsibilities as marketing manager for both Astrodata Inc. and Beckman Instruments covering computer-controlled data, telemetry, and industrial systems.

At Micro Systems, Ball will direct the overall sales, service, contracts, advertising, and market research activities of the company.

Ball completed most of his undergraduate study in electrical engineering at California Polytechnic in 1954 with graduate work completed in business management at UCLA in 1967.

He replaces Ken Allen, president of Microdata Corp. (the parent company of Micro Systems Inc.) who was acting director of marketing for Micro Systems Inc. since its formation in 1967.

Allen will now direct the corporate activities of Microdata Corp. which is also involved in computer-based hardware and software activities.

Micro Systems Inc., formed during the latter part of 1968, has shipped over 100 Micro 800 series computers and reports a firm order backlog in excess of \$3.7 million.

#### Other Moves

■ Republic Systems of Connecticut, Inc., with headquarters in Cheshire, has elected Gordon

P. Brunow president.

■ Duane E. Glaubitz has been named vice-president and general manager of Novar Corp., Mountain View, Calif. He will be responsible for Novar's internal activities, including manufacturing, engineering, material, and facilities.

■ H. Grady Black Jr. has been elected president and chief executive officer of Sequential Information Systems, Inc., Dobbs Ferry, N.Y. He has also been appointed a director of the company.

■ R. Perry Harris has been appointed vice-president and general manager of Comp/Utility, Boston, a subsidiary of North American Computer and Communications Co.



COMPUTERWORLD

## EDPeople

### Kalinski Assumes 2 Roles

NEW YORK — Dr. Felix A. Kalinski, a former senior officer of CBS, assumed the twin roles of vice-president of Lasso and managing director of Pergamon Press Ltd.

The Pergamon appointment was disclosed in London following action by the Pergamon board. Pergamon, a British-based publisher of scientific and technological books and periodicals, is 38% owned by Lasso.

Kalinski joined the Columbia

Broadcasting System in 1966 after six years as a vice-president of the International Basic Economy Corp. Prior to that time, he was senior vice-president and director of Vertol Aircraft Corp. from 1957 to 1960, and vice-president and general manager and a director of Perini & Luckman, the Los Angeles-New York architectural and engineering firm.

Kalinski was a director of CBS and president of the Communications Technology Group.



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## User Update

David H. Berg has been elected vice-president, data processing, at The Hartford Insurance Group, Hartford, Conn.

Richard M. Flynn has been named manager of data process-

ing of Gateway Transportation Co., Inc., La Crosse, Wis.

Harvey L. Pierson has joined the scientific computer services section of Atlas Chemical Industries, Inc. of Wilmington, Del.

The Central National Bank of Richmond, Va., has elected Donald R. Thornhill data processing officer.

Thomas V. Sobszak has been appointed manager of systems and electronic data processing for Walde Kohnor, Inc., Long Island City, N.Y.

Cities Services Co., New York, has named T.H. Allen systems consultant in the Information Systems Division.

Three new officials have been elected in the computer systems department, Trust Company of Georgia, Atlanta. Robert B. Barringer was elected to senior procedures analyst, J. Robert Sumner Jr. to senior systems analyst, and Thomas A. Tinsley to supervisory programmer.

The National Cash Register Co., Dayton, Ohio, has appointed James R. Earley director of

electronic data processing sales for its domestic sales division.

Robert R. Musitano has been appointed manager, data processing department, and John J. La Magna has been named manager, computer operations, of United States Tobacco Co., New York.

Grant F. Heck has been appointed section manager, systems analysis and computation, measurement and control research, in the research department of Bethlehem Steel Corp., Bethlehem, Pa.

Hooker Chemical Corp., Grand Island, N.Y., has named James M. Busini corporate manager of data processing operations.

The Missouri Pacific System, St. Louis, Mo., has appointed Guendro S. Sines director of information and control systems. He will be responsible for all the company's computer systems and services, including computer generated reports for management in accounting, traffic, operating, purchasing, engineering, and personnel.

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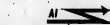
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## CDSil Offers T/S Service in Europe

**NEW YORK**—An agreement has been signed between International Computers Ltd. (ICL) and Computer Data Systems International Ltd. (CDSi).

CDSi was formed to offer a time-sharing service throughout Europe and will install and operate a network of ICL 1904A computer systems extending from Sweden to Italy. This agreement expands the international growth of both companies and provides the necessary requirements to be a major contributor in the fast growing time-sharing market.

In addition, it is intended that a programming contract will be placed by ICL with CDSi for the development of a time-sharing system and communications package to be used with the ICL 1900 series computer system.

Computer Data Systems is an organization of professional computer specialists providing services and support to user problems in business, scientific, and educational areas.

**Other Subsidiaries**  
\* Worlco, Inc. has formed a new subsidiary, Worlco Computer Management Systems, Inc. (WCMS) located in King of Prussia.

The company will offer consulting and data processing services to large and small business firms.  
The company will also offer facility management services, under which WCMS will assume total data processing responsibility for its clients including hardware operation as well as system development and programming effort.

\* Mechanical Technology Inc. has formed a new subsidiary to enter the computer-based information services market. The new firm, Datafile Systems Corp., will be located in Philadelphia. Datafile will develop and market an on-line information service for the wholesale distribution industry. Most small- and medium-size wholesalers currently rely on manual or punch card type procedures for their information requirements.

MTI was formed eight years ago as a research and development firm. It has since broadened its activities to include instruments, automation equipment, quality control machinery and ultrasonics.

\* Fimaco, Inc., Philadelphia-headquartered computer service bureau has formed Fimaco, Ltd., in Kingston, Jamaica. This is a major move on the part of the company to expand its computer input services, which comprise key punching, clerical support, and card-to-tape preparation for the EDP industry.

The Jamaica facility will enable Fimaco to do in house a sizeable amount of the work it now contracts to outside vendors and will permit the company to maintain internal control of its operations.

Fimaco, Ltd. will also be capable of handling additional projects for which it will initiate a marketing campaign.

In the area of subscription fulfillment Fimaco currently services magazines having a circulation exceeding 10 million. The

company now processes about one million cards each month.

\* Southern Pacific has formed a new subsidiary offering data processing services: Tops On-Line Services, Inc.

It will be a direct subsidiary of Southern Pacific's new holding company, and will be headquartered in San Francisco.

Primary emphasis of the new firm will be upon on-line, real-time data collection and information systems.

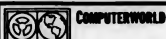
Tops On-Line Services will have its own computers and utilize a data collection, processing, and filing system which has been in successful operation since mid-1968 on Southern Pacific.

\* Dynamic Information Systems Corp. (Disc) has been established in Columbus, Ohio, to serve the need for information services within the parent company, Dynamic Security Corp., and its related subsidiaries.

It will also provide professional advice and aid to the business community in all phases of data processing.

Plans for Disc services include installation management, system development, application oriented time-sharing, software sales, and consulting.

\* Pitney-Bowes, Inc., and Alplex Computer Corp. executed a formal agreement for the formation of a new jointly owned company, Pitney Bowes-Alplex, Inc., for the manufacture and sale of computerized transaction recording and related systems.



## emerging enterprises

### Service Firm Established

**NEW YORK**—Comma Corp., a nationwide, independent computer maintenance company, has been established.

The company, with corporate headquarters at 1250 Broadway, is establishing service locations in all major cities across the country. Comma is setting up centers for reconfiguration and reconditioning in New York, Dallas, Chicago, and Los Angeles.

The service is available to those who own, rather than rent, their systems. Comma will also offer this service for mixed computer systems (computer systems composed of units from more than one manufacturer).

In addition to performing the maintenance services, Comma will offer maintenance consulting services. The company will also provide systems maintenance management which will especially benefit those customers with large, mixed computer systems. This service will coordinate the maintenance requirements for all types of equipment, mainframe and peripheral, thereby allowing the user to match his needs with the best mix of computer equipment available.

\* Metacomputer Systems, Inc. of Irvine, Calif., entered the printing and publishing industry as a special service of interest.

The new company intends to be a full-service company in the information processing field. It will provide hardware, software, system analysis, and a variety of information-processing services.

Included in the latter are two of the company's first products: computerized photocomposition service and a hyphenation-justification service for the printing industry.

The MSI computer system performs all such processes as alphabetizing, sorting, and integrating the page formats. First-time costs are said to be directly competitive with other techniques, while revisions and additions can be performed at a fraction of former costs.

\* Krall-McIvlin Information Corp. (KMI) has been formed in Paoli, Pa., to provide integrated consulting and information services to clients in business and industry.

The new firm offers a variety of computer services on a direct or support basis. The company is structured to contribute in the areas of application and communications systems development, system engineering services, data management systems, conversion planning and implementation, and consulting and management services.

\* The concept of "computer super market" is being announced with the formation of a new company in the computer field, Consolidated Computer Industries, Inc., headquartered in Orlando, Florida, with three operating divisions to serve the entire Southeast.

Initially the three operating divisions will consist of the Computer Consulting Division; the Computer Service Division; and the Micromation Service Division.

The "supermarket" of consulting services is offered by CCI through the consolidation of computer programming professionals now in the industry. Services will be available to accounting and CPA firms, computer manufacturers, software firms, and business and industry.

Through the supermarket plan, companies can realize substantial income and reduction in operating costs of computers.

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March 4, 1970

Page 49

## Levin's Projects Go Overboard

## Profits Vanish as Levin-Townsend Drops Investments

NEW YORK—Lower sales, losses instead of profits, and massive write-offs marked the nine-month report of Levin-Townsend Computer Corp.

Gross revenue for the fiscal nine-month period totaled \$48,894,000 compared with \$52,297,000 in the prior fiscal period.

Earnings for this period before write-offs and losses amounted to \$3,928,000 or \$1.17 per share, compared with \$9,064,000 or \$2.51 per share for the nine months ended Dec. 31, 1968.

Total write-offs amounted to \$19,519,000 after related tax benefits of \$905,000. After

write-offs and losses, the company had a net loss for the nine months ended Dec. 31, 1969 of \$15,872,000.

Write-down and operating losses taken on the company's interest in the Bonanza Hotel and Casino property in Las Vegas totaled \$10 million after the above-mentioned tax benefit

at \$905,000. It was reported that efforts are being made to sell this property.

Write-offs were taken totaling \$5.2 million including the company's interest in unaffiliated companies, a residual balance from two Broadway plays and sundry holdings.

Also written off were certain items of goodwill amounting to \$3,900,000, which, in the opinion of management, were not considered to have continuing value.

With the exception of \$839,000 relating to the write-off of goodwill in Levin-Townsend Service Corp., all other write-offs and losses were directly attributable to Levin-Townsend Enterprises, Inc., a subsidiary with interests in fields unrelated to computer leasing and computer service activities.

In January, when the Levin-Townsend board fired Howard S. Levin as president and chief executive officer, his successor, James E. Townsend, announced that the company expected an adverse nine-month report, but refused to say how bad it might be.

At that time he said that the "reassignment was necessary in order that management may direct its efforts and resources into those areas of activity which afford the company the

greatest growth potential and profit return."

It was understood that the Levin-Townsend board refused to go along with Levin's moves to diversify the company away from computer leasing. The write-offs of some of Levin's more spectacular projects confirm this.

In reporting nine months operations, Townsend said that computer leasing should continue to be a profitable and viable business. He did not project but said he anticipated that this should also apply to certain of the real estate holdings of National Equities, Inc., a subsidiary company.

He noted that the company's rental experience with its computer equipment portfolio, totaling in excess of \$156 million, was excellent and that the company had been successful in placing returned equipment.

Townsend said that it is management's intention to withdraw from the activities which have caused the losses written off. He noted that such activities should not cause further losses to the company beyond those dealt with in the fiscal third quarter.

The chief executive again did not forecast but said he anticipated that the company should report profitable operations for the last fiscal quarter ending March 31, 1970.

## Hearing Date Set While Townsend Claims Autocratic Levin Squandered L-T Funds

NEWARK, N.J.—Howard Levin's effort to regain control of Levin-Townsend Computer Corp. has inched forward a step but successful first step.

A temporary restraining order has been granted Levin giving him access to all papers and records of Levin-Townsend and the Superior Court here has directed the corporation to make available to Levin all mail addressed to him.

The court set March 13 for the start of hearing arguments on Levin's suit charging the L-T board of directors with conspiracy to "hush management of the concern."

Levin had stated that though he remained a director and the largest shareholder of the company, he had been denied access to its offices and records, and that he was prevented from taking his personal property from

his office.

Levin is asking the court to declare that he is the legal president of L-T, and that the action of the company's board of directors firing him on Jan. 16 was part of a "scheme."

Townsend and the L-T directors have fired back at Levin in an affidavit swearing the ouster was legal and denying Levin's allegations.

The company claims that Levin ran the firm autocratically and unwisely.

As well as citing numerous bad investments, the affidavit says that Levin refused to give up a four-engine corporate jet costing \$60,000 to \$70,000 a month, at a time when the company needed cash badly.

Townsend said he has cancelled Levin's order for a \$28,000 Mercedes-Benz limousine and a \$900 attaché case. He also contended that Levin "insisted on placing personal friends on the corporate payroll."

Townsend also described several corporate investments that the company has not been able to recover.

Replying to Townsend's affidavit, Levin said, "Townsend hasn't tried to defend the outrageous conduct charged... In my suit on the merits. He has apparently found it necessary to resort to personal allegations..."

## UCC's 1969 Net Earnings Rise 93¢ per Share

DALLAS, Texas—University Computing Company operating revenues and net income increased substantially in 1969 over 1968, according to UCC President Charles J. Wylly Jr.

For 1969 UCC had net income of \$16,826,000, or \$2.50 per share, while revenues amounted to \$108 million. Net income from computer operations was \$9,114,000.

For the year earlier UCC net income, restated to include adjustments made on a pooling-of-interest basis, amounted to \$9,986,000, or \$1.57 per share, on restated revenues of \$60 million.

Wylly attributed the 1969 results in part to "improvement in profit margins in the computing services business, where increased volume was accommodated without a parallel increase in cost."

Earnings of UCC's subsidiary, UCC Financial Corp., amounted to \$7,712,000, including \$1,767,000 net realized gain on investments (less \$681,000 other net costs), \$533,000 from net operations of unconsolidated insurance subsidiaries, and \$6,093,000 net realized gain on investments of unconsolidated insurance subsidiaries.

In 1969 UCC increased the number of large-scale computer systems used in its computer utility operations to nine and created the first "super center" at Dallas by adding a second large-scale computer.

The company also added business data processing centers in San Francisco and El Paso, and expanded its British and

European operations into additional cities.

Wylly noted that "the economic constraints of 1969 retarded earnings growth in several industries, but business conditions remained favorable in most of the service and product markets of UCC."

UCC recently purchased \$36.3 million of computing equipment from Sperry Rand's Univac Division that Univac had been leasing to the federal government as part of a communications and defense network.

To pay for this and the purchase of a large interest in Computer Technology from LTV Aerospace, UCC increased to \$60 million the size of a bond offering it is issuing.

## Ousted Computer Technology President Sues UCC, LTV, LTV Aero for \$87 Million

CHICAGO—G.W. Woerner, Jr. has filed an \$87 million suit against University Computing Corp., Ling-Tech-Voughly, Inc., and LTV Aerospace Corp. charging that they "unjustly enriched themselves" at the expense of Computer Technology Inc. and its minority shareholders.

Woerner was replaced as president of Computer Technology as part of a complicated deal transferring control and partial ownership of CT from LTV and LTV Aero to UCC. Woerner remains a director of CT.

Both LTV and UCC refused to comment on the suit.

Woerner's main complaint is that one of the provisions of the

deal was that LTV Aero would "cause Computer Technology" to enter into a \$200,000 management contract with UCC that would last three years. Thus CT would end up paying UCC an aggregate \$7.2 million.

Woerner asserts that UCC is providing "very little" of the services called for in the contract, that it lacks the personnel and facilities to do so, and that even if it could carry out the contract, the services wouldn't be worth \$200,000 a month.

The suit charges that UCC and LTV are milking Computer Technology and its minority shareholders as part of the complicated swap of subsidiaries.

Before the deal, LTV Aero

## Control Data Corp. Plans Terminations, Cost Cuts

MINNEAPOLIS—In the wake of a disastrous fiscal year, declining sales, and an increasingly gloomy future, the memo went out from the executive offices of Control Data Corp. to the desks and work benches of its 37,000 employees.

"...Circumstances make it mandatory for us to take immediate action to reduce expenses in line with business in-

1970 as we projected.... Reduction of expense will be made in all areas of the company.... Although we expect to reassign some employees, we cannot avoid terminations."

The company memo said that "tight money, inflation, reduced government budgets, and the uncertain economic outlook" had forced personnel reductions, and curtailed capital outlays and expenses.

CDC said that the squeeze was hardest in its large computers and space and defense business. The guidelines for cost reduction also included organizational consolidation, minimum capital expenditures, and program reviews, as well as staff cuts.

The announcement said nothing about the magnitude of the reductions.

Last month, CDC Chairman William Norris predicted significant improvement in the second half of 1970, but admitted that he expected a sharp reduction of computer profits in the first half of this year. He also announced CDC's year end report, which showed net earnings from computer business tumbling 25% already.

The memo added, "We can expect a minimum of new business from our old customers until the economic situation changes..."



## Nickels and Dimes

Merger negotiations between ITN and MATRIX have been called off. ITN offered about \$2.2 million for Matrix last month, but Photo Magnetic Systems later topped their bid by several hundred thousand.

**\$ \$ \$**  
NCR earnings and revenues grew 17% and 11% respectively for the year just ended. Per share earnings were \$4.11 compared to \$3.67 for 1968. Fourth quarter earnings were up 24% and volume 14%. Company said that first quantity deliveries of the Centurion full earnings because the majority are Kentel, and haven't yet recovered marketing, installation, and depreciation costs. NCR is also splitting its stock 2-for-1.

**\$ \$ \$**  
Troubled COMPUTER USAGE reported an operating loss for the first quarter of \$488,000 or 58 cents a share. This is lower than the previous quarter, but for the first quarter of 1968 the net loss was only \$185,000, or 22 cents a share. CUC has also acquired 8% of Computer Services Corp. of Detroit.

**\$ \$ \$**  
Our Department of Commerce Business and Defense Services Administration has said the EDP market in FRANCE will grow 15% a year for the next three years, and that U.S. firms will supply 80% of the country's computer needs. The only problem is that the study was conducted in 1968 and the three years end in 1971. Apparently, the transfer of time between the embassy in Paris, our State Department, and our Department of Commerce, through our Post Office to our desk is something over a year.

**\$ \$ \$**  
CALCOMP's first half earnings down over 50%, from \$496,000 to \$232,000, on a revenue increase from \$9.5 million to \$10.4 million. Per share figures were 10.2 cents this year against 22 cents last year. CalComp's president said the earnings drop was due to launching new products that won't generate income until later in the year. The new products include disks, an automated standard card puncher, and a microfilm plotter/printer, deliveries will begin within six months.

**\$ \$ \$**  
**COMPUTER COMPLEX** and **COM-SHARE** have called off their merger, no reason was given.

**\$ \$ \$**  
**TIME-SHARING TERMINALS**, Washington terminal service firm, suffered a \$192,000 loss for fiscal 1969. Comes out to 27 cents a share, on revenues of \$530,000.

**\$ \$ \$**  
And one of the interesting figures from **AMERICAN RESEARCH AND DEVELOPMENT's** annual report is the entry for DEC. Way back when ARD bought 48% of DEC's common stock for \$61,400; they now value the 4,605 shares at a hefty \$463,378,125. But the who'd want the headchairs figuring out the capital gains, anyway?

## Computerworld Stock Trading Summary

NEW YORK AND AMERICAN STOCK EXCHANGE CLOSING PRICES, FRIDAY, FEBRUARY 27; OVER THE COUNTER, THURSDAY, FEBRUARY 26

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"Get the hell out of here, she's gonna go up!"

And boy, did she go up.

On November 13th, 1969, a single engine plane came in for a landing at Princeton Airport. Suddenly it nosed down and crashed into the ADR offices. Miraculously, no one was hurt.

The quote above came from the pilot of the plane. His prediction was correct. Gasoline splashed over the roof and walls and within seconds flames were roaring across the frame building. The photo above gives you some idea of extent of the fire and destruction. What you cannot see, however, is the remarkable story of what was saved, not lost.

ADR came through the crash, fire and flood with 95% of our software libraries intact and operable. Thanks to two of our own proprietary products, Librarian and Autoflow. We use Librarian as a source program retrieval and maintenance system. All major source programs are stored on tape in the Librarian master files. These tapes were removed from the burning building before they could be harmed. The equivalent

## UNPLANNED DEMONSTRATION

of over a quarter of a million cards had been placed on Librarian tapes. It would have taken four 20-drawer file cabinets to hold this many cards. These files could never have been saved. Even though innumerable card decks and vast quantities of printer output were totally destroyed, the work they represented, safely stored on Librarian tapes, was easily rescued. The information on these tapes, including commentary on the historical development of the source programs, enabled our programmers to get back to work in a fraction of the time that would have been necessary without Librarian.

Autoflow, our computerized flowcharting and documentation system, was the second hero of our saga. Autoflow made it possible to immediately regenerate flowcharts lost in the fire. Without Autoflow, manual re-creation would have been needed.

We did it the hard way, but we think our unplanned demonstration proves quite a bit. Not all accidents, mishaps and losses will be as dramatic as ours. But you never know what will be lost, torn, mishandled or misplaced.

Librarian and Autoflow saved us inestimable time, money and effort. We never used the term before, but both products served as vital "insurance" in continuing our normal operations. But possibly in your business, this aspect is not important. After all, things like accidents and fires only happen to the other guy. For a planned, peaceful demonstration of Autoflow and/or Librarian, call or write:

**Applied Data Research, Inc.**

Route 206 Center, Princeton, N.J. 08540  
609-921-8550. Offices in principal  
U.S. and foreign cities.

